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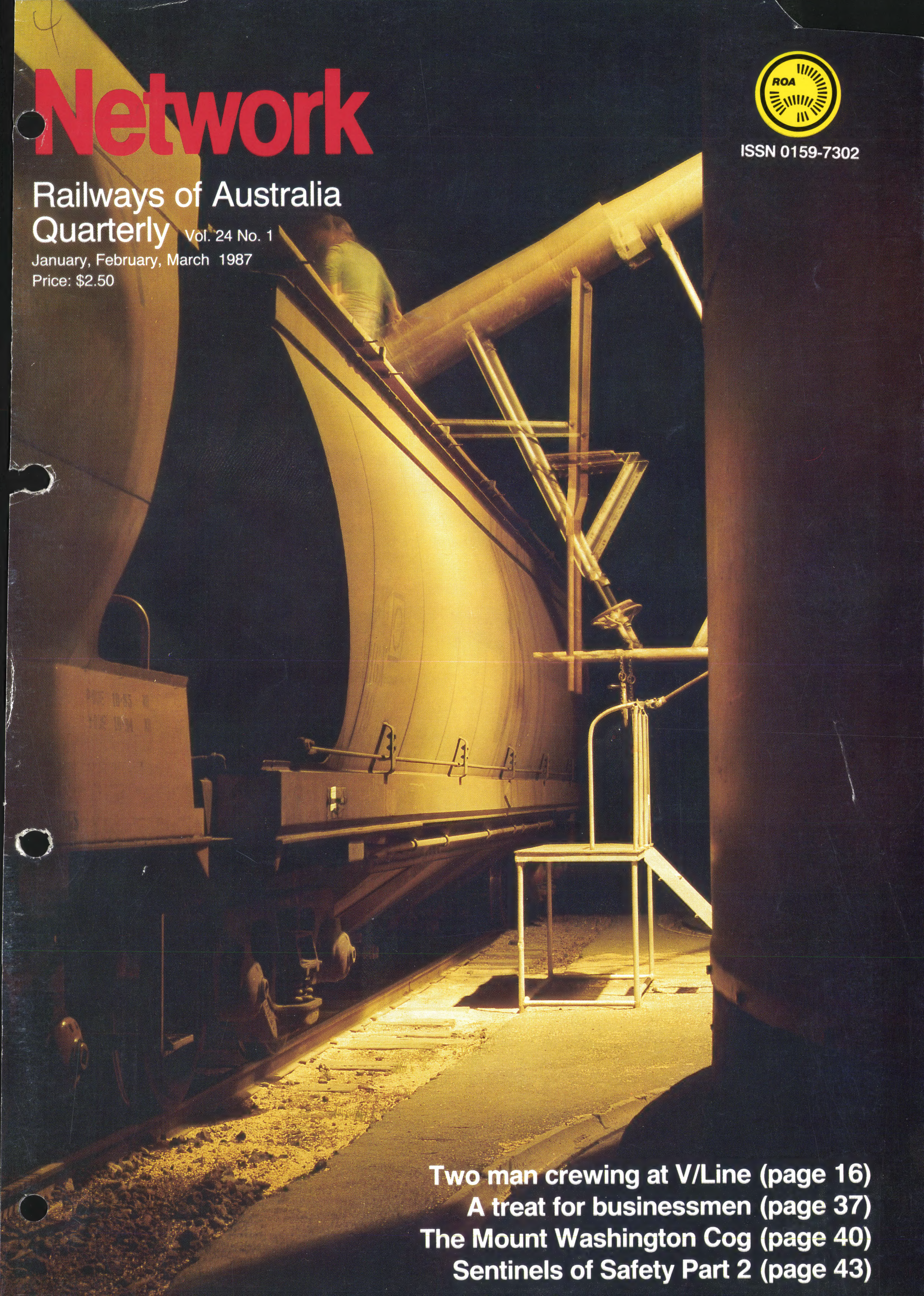

Two man crewing at V/Line (page 16)
A treat for businessmen (page 37)
The Mount Washington Cog (page 40)
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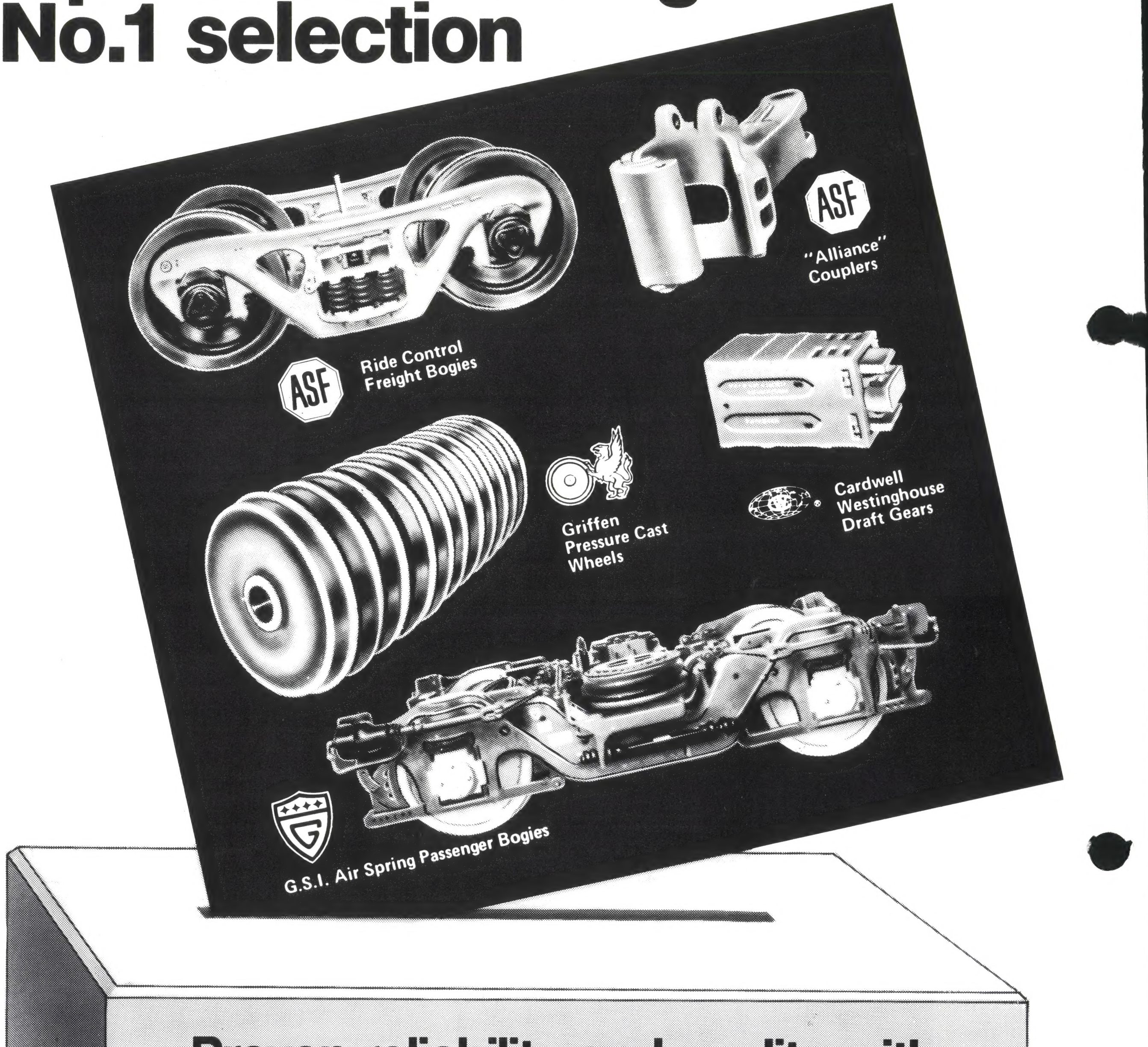
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Vol. 24 No. 1
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- *Queensland Railways*
- *State Rail Authority of New South Wales*
- *State Transport Authority — Victoria (V/Line)*
- *Western Australian Government Railways (Westrail)*

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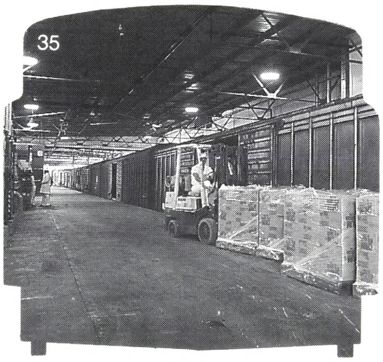

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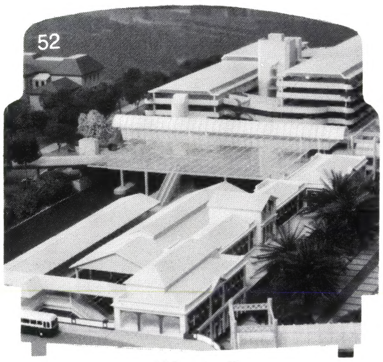

Westrail

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Front Cover:

Loading wheat in the Wimmera by night. A V/Line block train at Glenorchy, near Horsham, bound for Geelong.

Our only requirement of writers and personalities who contribute to Network is that they be informative or entertaining and that their subject has relevance to the wide interests of railwaymen today. Naturally, there will be occasions when their viewpoints or opinions run contrary to those of the editor or to Railways of Australia. We must accept that these differences are among the elements essential to the presentation of a lively and interesting magazine.

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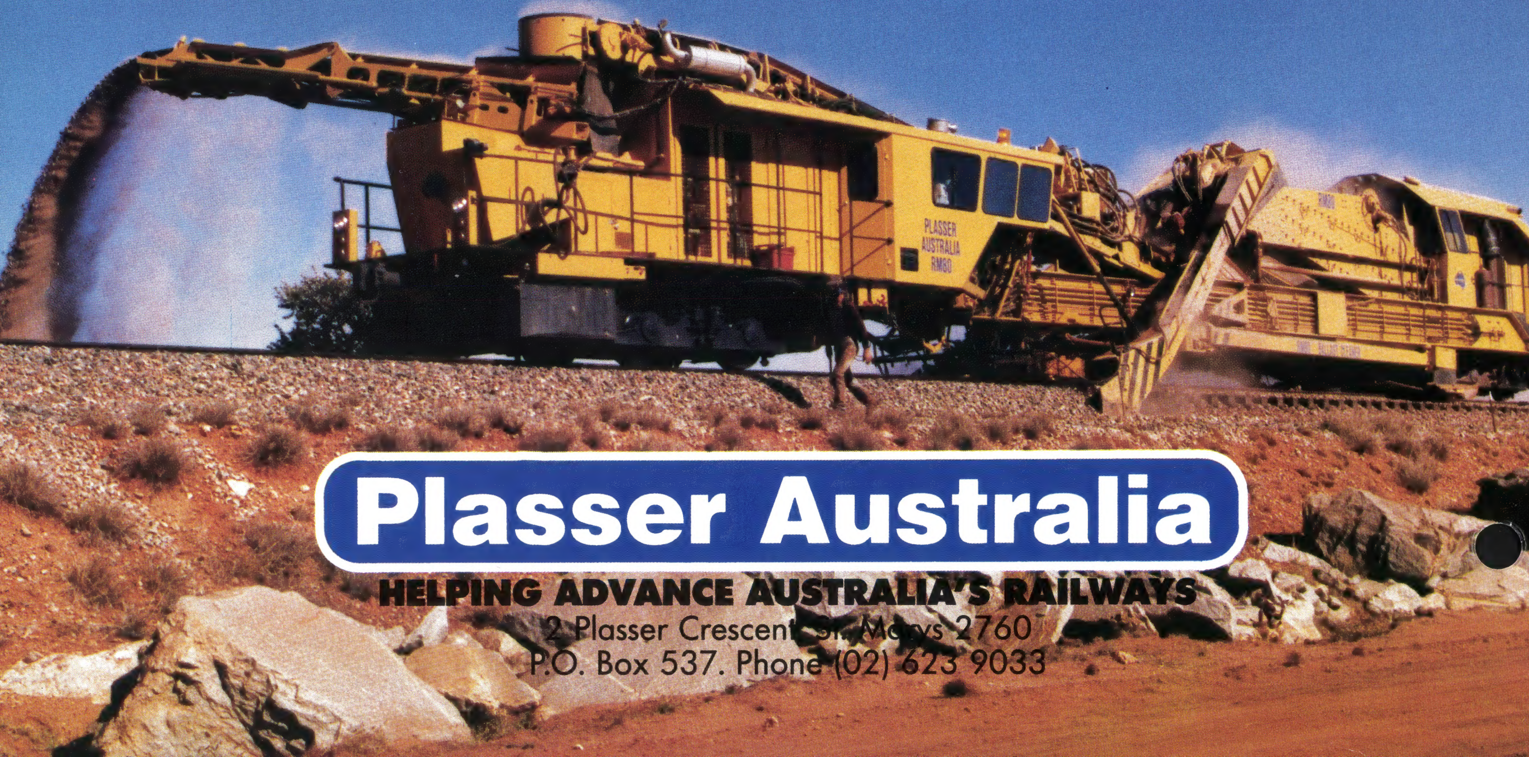

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The EXECUTIVE DIRECTOR'S column

A progressive step for passengers

At their annual conference in October, the chief executives of Australia's rail systems met in a new capacity — as the Interstate Passenger Services Board.

There is no doubt that Australia's long-distance passenger trains are a good product. When compared with their overseas equivalents and with other passenger transport in this country, they offer good value for money.

But there is always room for improvement.

And improvement can be made more difficult when five independent rail systems combine to operate the services. Lines of communication become lengthy; progress can be slowed.

Considerations such as these led the Railways of Australia Commissioners — the chief executives — to appoint a senior manager for their Interstate Passenger Services.

Mention is made elsewhere in 'Network' of Mr Geoff Thornely's accession to the post, and I welcome him to the ROA scene.

With an impressive operational and marketing background in Qantas, our national airline, he brings experience and fresh thinking to the railway ranks.

Hence the first meeting of the Interstate Passenger Services Board, to which Mr Thornely will report. He met his 'chiefs' for the first time.

His first task will be to appraise and assess our present interstate passenger trains and to develop an action plan for any improvements seen to be necessary. A budget for promotion of the services will be prepared. Both activities aim at two things — better service, greater profitability.

After approval of the plan by the board, Mr Thornely will work with our systems in implementing it. We all look forward to the maintenance of our present standards, and to improvements in them as the plan develops.

The establishment of the Interstate Passenger Services Group comes at a time when there is a positive upsurge of interest in and traffic on our passenger trains, particularly from overseas visitors and the inbound tourism industry.

Awareness of the potential for our services has been stimulated in overseas markets by more vigorous marketing and promotion . . . and Railways of Australia Commissioners have made the funds available to initiate more intensive advertising.

During the past year, for example, we commissioned and released to the world markets an 18 minute videotape, titled 'Australia By Rail', which provided detailed information on our major long distance trains.

Apart from English, the sound tracks were translated into German, French and Japanese . . . and almost two hundred videotapes were provided to the major market areas.

This initiative has proved to be a most effective marketing tool.

The most recent revenue figures from overseas reveal a direct sales increase of over 51% for a 12-month period and a heart warming increase of 65% in business from members of the Inbound Tour operators of Australia (ITOA).

Obviously the potential for development is considerable and some runs are already on the board.

I am confident our new Interstate Passenger Services Group will keep them coming.

Michael Schrader

M. C. G. SCHRADER
EXECUTIVE DIRECTOR

M. C. G. Schrader

ROA prize goes to 'Liteslice'

The second annual Railway Engineering Award has been won by the joint submission from Aldetec Pty. Ltd., C.S.I.R.O. and Hamersley Iron for the development and production of an automatic rail profile measuring device, Liteslice.

Until recently rail wear measurement was by hand held mechanical pantograph placed around the rail. Attempts have been made periodically to collect data automatically and resulted in slow-moving vehicles with mechanical feelers which incurred high operating and maintenance costs and disrupted revenue traffic.

Liteslice is a high-speed non-contact optical profile measurement system which achieves a highly accurate measurement of rail head wear to 0.2 mm accuracy using a light flash, solid state cameras and digital processors.

The target is illuminated by a structured sheet of light and observed by cameras displaced so that the camera image contains the shape of the target, a technique called "Light Sectioning."

The profile is then computed and two or three-dimensional displays presented on screen and print-out. Very fast electronics achieve a processing cycle of five profiles per second which permits profiles of both rails every 5 metres to be recorded whilst travelling at 80 km/h.

The system is versatile and has applications also in such areas as rollingstock wheel profile, overhead catenary wire section measurement, hot strip measurement in steel mills and rotary crusher tank content.

In its findings the selection committee found that Liteslice is the result of significant interaction between railway operators, government research institutions and private industry which is a unique Australian development, is innovative in concept, has significant cost and performance capabilities over existing methods of measurement and is a major achievement.

It should enhance the prestige of Railway engineering in Australia and has great export potential.

The annual award is the initiative of the National Committee on Railway Engineering of the Institution of Engineers, Australia, and carries a cash prize of $500 donated by the Railways of Australia Committee.

The award plus a memento and certificate for each individual award winner was presented at an Institution of Engineers Division function in Perth during December 1986.

The Railways of Australia sponsors the Annual Engineering Award which is presented for a major contribution to railway engineering.

The Award is promoted by the National Committee on Railway Engineering of the Institution of Engineers, Australia essentially to provide encouragement for younger engineers in the railway industry.

Nominations of projects, technical papers, designs or innovations presented or implemented during 1986 will be accepted from organisations, groups of engineers or individuals for consideration by a selection panel.

Submissions should be forwarded by 31st March 1987 to: The Chairman, National Committee on Railway Engineering, The Institution of • Engineers, Australia, 11 National Circuit, Barton, ACT. 2600.

Freight rate freeze helps wheatmen

Rail freight rates for export wheat in New South Wales will be effectively frozen for 1987.

The NSW Deputy Premier and Minister for Transport, Mr. Ron Mulock said recently that while grain freight rates were increased from 1 December, by around five per cent, discount would apply to export wheat resulting in wheatgrowers paying no more than in 1986.

The discount has been made possible because of improved rail efficiency and improved operating co-ordination between the State Rail Authority and the NSW Grain Handling Authority.

The freeze is the first stage of a State Rail plan to reduce the real level of export wheat freight rates in New South Wales by 25 per cent.

"State Rail has initiated the trial, which began on 21 September, to increase rail operating efficiency with new loading procedures," Mr. Mulock said.

"The plans were outlined in a recent seminar held at Dubbo at which two options to reduce export wheat freight costs were put forward.

"Moves already started along these lines include:

- the use of longer trains, increased from 26 to 39 wagons.
- more efficient use of rolling stock by a restructured system of ordering trains.
- the reduction in crewing requirements," he said.

Mr. Mulock said the five per cent discount to growers would apply to all export wheat whether it was consigned from silo to port direct, or from silo for consolidation at sub-terminal and thence to port.

The Authorities expect five million tonnes of export wheat to be transported in the 1986/87 period, with domestic movements estimated at 0.8 million tonnes.

"While export wheat rates will be frozen, the five per cent increase will apply to barley and other grains, as well as domestic wheat haulage," Mr. Mulock said.

"This is because these grains cannot be moved under the same efficient operating specifications as export wheat.

"The five per cent real reduction in costs for export wheat in 1987 is the first of what is planned to be a series of real reductions in freight costs as proposed by State Rail at the recent Dubbo seminar."

"The proposals to the industry concerning the cost-based rail structure will be followed up with a series of meetings in the country to discuss the ramifications of the rating system, and obtain feedback from th growers," Mr. Mulock added.

Westrail's 'speed ramps' flatten hills

Westrail Driver Ben Pearce failed three times recently to get DB1590 and 22 wagons over Neendalling Hill near Lake Grace in the Great Southern of Western Australia.

On the fourth attempt he pushed his train to 68 km/h (track speed is 50 km/h) and cleared the hill.

Thus did a "speed ramp" make the transition from computer simulation to reality.

The Neendalling Hill test will lead to the approach speed for the hill being permanently raised so that fully loaded trains can get over the top.

The speed ramp concept is being used as one method of overcoming adverse grades, the other being to cut the tops of the steeper hills by regrading. At a number of locations it has been found that grades less than the required 1 in 80 can be overcome by strengthening the track and raising the approach speed. This has already been carried out at two sites on the Wyalkatchem to Mukinbudin Railway in the central wheatbelt.

When the grade is shown to be a problem, the existing track gradients are fed into a train simulator operated by Motive Power engineers.

Among the information produced by the simulator are the speed and tractive effort of the locomotive as it clears the hill.

It has been shown that where locomotive limits are exceeded on very long hills, regrading must be carried out. However, on shorter hills it may be more economical to strengthen the track locally and raise the approach speed above that promulgated for the particular location.

The Neendalling test involved Civil, Mechanical and Traffic Branches at Head Office and District level.

Because of the relatively higher speed involved, the track over the length of the test was examined and the superelevation on the curves adjusted.

The test showed that a speed of 68 km/h was the maximum needed, very close to the speed of 70 km/h predicted by the simulator.

Between the 92 km and 93 km on the Wagin-Lake Grace line at Olivers Dip a combination of track realignment, vertical profile regrading and a speed ramp are being constructed as the most economical method of overcoming a restricting grade.

In addition, train simulation is now being used to determine the speeds and length of a speed ramp on the approach to the Murdong Bank south of Katanning in the Great Southern.

Because the speed ramps will involve speeds higher than those allowed in the working timetable, special speed/speed termination boards have been proposed. They will define the limits of the length concerned and give the permissible speed for the given axle loading.

All the speed ramps in the Great Southern were due to be completed by the end of November and their completion will allow the haulage of 1:80 trailing loads from Lake Grace to Albany.

...And new locos will cut costs

Westrail will buy at least 18 new-generation, narrow gauge locomotives incorporating the latest micro-processor control and diesel engine technology.

The order, which may be increased to a maximum of 27 units, could represent Westrail's biggest-ever single purchase of locomotives.

Delivery should begin within two years and will enable Westrail to retire about 32 of its old, less efficient, narrow gauge locomotives.

The new locomotives will significantly advance Westrail's potential to compete in the commercial transport arena.

Their introduction will mean a substantial reduction in operating costs through greater fuel economy, lower maintenance requirements and greater reliability.

Westrail Traction Engineer Mike Beavan said it was conservatively estimated the new locomotives would be 20 per cent more fuel efficient than those replaced.

The significant changes in locomotive design would mean longer periods between scheduled maintenance, thereby giving a high unit availability for traffic tasks.

The design changes would also provide considerably greater tractive power within existing weight and dimension constraints.

The purchase of the new locomotives will mark the beginning of an important new replacement plan adopted by Westrail.

The new policy is directed towards replacement of locomotives after about 15 years, considerably earlier than has been the case up to now. The locomotives to be ordered incorporate control systems said to be the most advanced available.

This, for example, is what one manufacturer offers.

Three microprocessors each control a separate function: logic, excitation or diagnostic and display. The logic computer controls such functions as engine speed, locomotive direction and traction motor switching.

The excitation system controls wheel creep control, dynamic braking and the latest fuel economy features. The diagnostic and display system replaces conventional fault annunciators and indicator lights.

The system monitors locomotive operation continuously, detecting abnormal conditions, recording the condition of the locomotive at the time the fault occurred and, in some cases, initiating corrective action.

The diagnostic system can analyse fault conditions and provide maintenance staff with detailed information on where the problem is.

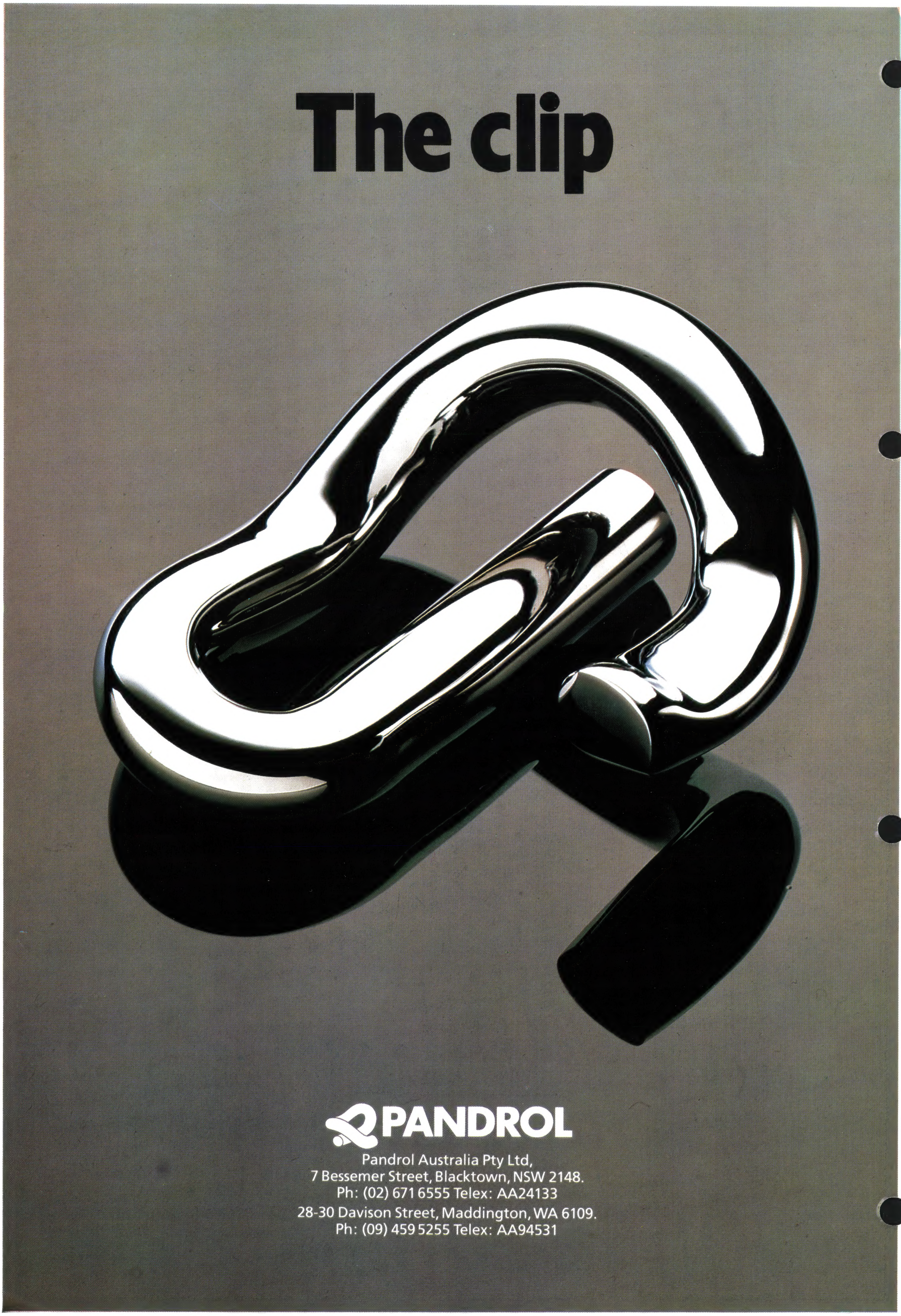
The micro-controls also add to the reliability of the locomotives by avoiding unnecessary engine shutdowns.

Older control systems automatically shut the engine down when certain generic types of faults are detected.

By contrast, the latest microprocessors are programmed to analyse the fault more precisely and decide whether the problem can be dealt with in some other way.

For example, if the cooling water overheats, power is reduced to keep temperatures within acceptable limits.

Another major advantage is that routine maintenance and overhauls can be scheduled when they are actually needed rather than on fixed time or distance intervals.



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Queensland Railways shapes up for the task ahead

(By Mr. Ralph Sheehy, Commissioner for Queensland Railways and Chairman of The Railways of Australia Committee).

With the present state of the national economy and also the world's uncertain marketing position, it would be a very brave man, indeed, to look too far into the future.

However, the world-wide trend seems to show a resurgence in railways and I have no doubt the Queensland Railways will follow along that trend.

Indeed the Main Line Electrification Project gives us a tremendous edge in maintaining our place in the country's transport scheme.

The bulk of Q.R.'s business is generated by primary industries — coal, minerals, nickel, wheat and other grains, sugar and other agricultural products — most of these are destined for overseas markets and therefore, the health of the railways will depend on the long term health of world markets.

Although hundreds of millions of dollars have been invested with justifiable reason into the electrification on the Brisbane suburban network and in Main Line Electrification, the rest of the system has been starved for capital funds for many years and will be for many years to come.

We must share the scarce resources available to the State with other social needs, such as hospitals, education, roads, etc.

PRODUCTIVITY

Therefore, we must continuously strive to contain our costs. We can no longer assume that we can, year by year, increase charges to cover increased wages and material costs.

If we are asked to sum up the objectives of the Department in the immediate future in a few words, I would say unequivocally it is to ***improve productivity and performance.***

Productivity means doing more with less resources.

Performance means quality of service.

- giving the customer what he wants and when he wants it and the price he will accept, and in our work.
- doing a job once by getting it right the first time.

You may ask how we are going to achieve these goals? We have already started.

The investigation by P.A. Management Consultants three years ago charted the course for us. No matter what you may have heard, it was a very good report and addressed problems which needed to be resolved.

Like any huge mass at rest, it took some time to overcome inertia and pick up momentum, but that is now happening.

P.A.'s second report (which has yet to be publicly released) confirmed the Department has accepted the challenge and had implemented the recommendations contained in the first report.

This second report emphasized the need to continue vigorously along the road on which we had started, viz. labour cost reduction, improved management information and increased commercial orientation.

Mr. Ralph Sheehy

CARE

We must continue to lean down the organization to match resources with the tasks to be performed, eliminate outmoded and unproductive work practices, maximise use of modern technology and increase marketing where profitable traffic is to be obtained.

Because many of these changes will affect employees, either in their home situation or in their work environment, the Department must demonstrate that it is a caring employer, concerned for the well-being of its employees and families.

We have demonstrated that we are prepared to be, in our discussions with employees who will be affected by Main Line Electrification.

Perhaps I can now touch on some specific initiatives on which we are currently working and which will affect the Department in the short term.

Firstly, let me summarize 1985/86 results —

Queensland Railways' operating profit for 1985/86 totalled a record $117.8 million with our annual net deficit falling to $37 million.

Unfortunately, this result is not expected to be improved in 1986/87 as the cost of servicing our huge capital expenditure on Main Line Electrification will affect our total results for some years to come until the maximum savings generated by M.L.E. occur by the end of the decade.

(continued on page 10)

for the

The ultra-modern $75 million Brisbane Transit Centre in Roma Street houses coach, rail, office and retail facilities.

TRAFFIC TASK PERFORMANCE RESULTS 1985/86

The 1985/86 traffic task resulted in a large increase in tonnes hauled over 1984/85 from 65.4 million tonnes to 73.5 tonnes, largely because of the increase in minerals hauled including coal, from 56.2 million tonnes to 63.4 million tonnes.

Agricultural and rural commodities also increased from 5.1 million tonnes to 5.7 million tonnes, and there was a large increase in container traffic shown under 'other traffic' which increased from .95 million tonnes to 1.29 million tonnes. Country passenger traffic declined further from 1.46 million passenger journeys in 1984/85 to 1.25 million passenger journeys in 1985/86.

Main picture:
A large increase in 1985/86 container traffic has occurred through the Acacia Ridge Terminal.

A model of the Brisbane-Rockhampton Electric Inter-city Express.

Suburban passengers however, continued their upward path from 37.4 million journeys in 1984/85 to 40.2 million journeys in 1985/86.

Organisation Development

Through the corporate planning process, management is shaping Queensland Railways future position in the market place.

The organisational framework has been created and although in their early stages, processes of critical importance are being put in place.

Marketing

- Business plans are being prepared to make up the overall marketing plan. These plans detail the current situation including market share, and indicate what opportunities and threats are likely for specific commodities.
- A new rate schedule is being prepared which will eliminate the current goods and livestock rates schedule replacing it with an easy to use simple scale.
- Parcels and good offices are being amalgamated to form freight centres. It is intended to eliminate separate parcels and goods operations and implement a new freight system based on: Maxi-freight (min. 51 kg consignment); Mini-freight (max. 50 kg consignment); Railink — door to door 50 kg/item.
- The commercial representative network has been restructured and upgraded.
- The freight business group has been re-organised to more efficiently manage the major businesses.
- The passenger services group has been re-organised to develop the existing passenger carrying capacity. No additional long distance passenger trains are contemplated other than the new

(continued on page 12)

edge for

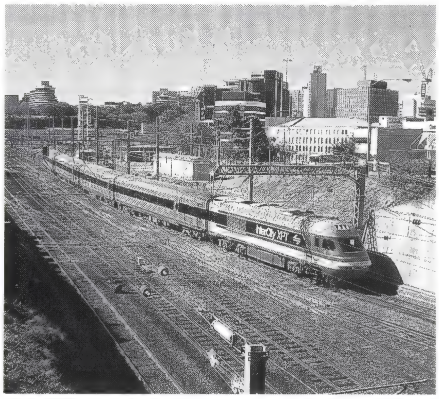
electric intercity train to Rockhampton, replacing some of the existing Capricornian and Sunlander services. The Queenslander will continue to operate from Brisbane on Sundays and the existing Sunlander train will operate north from Rockhampton.

Management and Future Development

Following the recent re-organisation of the top management structure, in increasing the number of Assistant Commissioners to five (5), no further restructuring is planned for the foreseeable future.

The Manpower Plan is to be further developed to take account of future projected traffic trends as well as initiatives such as two man crews, electric traction, computer assisted management information system, mechanised maintenance and changes in management strategy. This will enable forward plans to be made to manage staff changes and thus avoid unforeseen peaks and troughs.

The Rollingstock Information and Control System is fully operational with 63 V.D.U. terminals installed specifically for R.I.C.S. and the capacity to access the system through any of the 180 visual display units in the system (if a valid password is held). Undoubtedly, the R.I.C.S. is a powerful management tool and Queensland Railway Operations Officers have a highly credible real-time system to assist them in rollingstock management and control.
Recent auditing revealed an error rate of less than one (1) per cent. R.I.C.S. management aim for inputs within thirty (30) minutes of occurrence. This objective has not yet been achieved, however there is gradual improvement in all areas.



A new sight in Queensland: a visiting XPT shown southbound after the opening of the standard gauge extension at Roma Street Station.

The $100 million Toowong Village Complex Brisbane, showing the new railway station, retail and office towers under construction.

All kilometre statistics are now being calculated by R.I.C.S. and additional programmes such as wagon maintenance statistics, gross tonne kilometres per line section, are being calculated.

Elimination of Consignment Notes and Introduction of Automatic Rating

A project team has begun work on the development of an electronic freighting system.
Although still in early stages of development it is planned to eliminate consignment notes when possible. This type of system is in operation in overseas railways.

Computer Assisted Rostering

A project to develop computer assistance for roster clerks is nearing completion. A pilot programme has been trialled in Toowoomba in October, 1986.
The project is in two (2) stages, Stage 1 involves providing maximum possible assistance to roster clerks while Stage 2 is designed to completely computerise the rostering process.
Following program adjustment the system will be re-introduced to Toowoomba.

Production of Cheques for Payroll

Cheque writing machines in major centres were nearing the end of their useful life and a computer programme to produce payroll cheques at Townsville has been completed and the necessary terminals installed.
This system will be progressively extended to other centres.

Motor Vehicles

The control of the Department's large fleet of motor vehicles has been handled by several sections concerned with the various aspects of motor vehicle control and usage.
A computer programme to place motor vehicle details on the mainframe computer where all relevant sections can access for particulars has been introduced.
The program contains details of each vehicles's registration and insurance particulars.

Electric Locomotive Component History and Maintenance Planning

A computer programme which will initially document all electric locomotive history and provide a planning tool for electric locomotive maintenance has been designed to be extended to include diesel electric locomotives and be accessed by any terminal connected to the mainframe provided the necessary authority is held.
This programme has been installed at Callemondah depot near Gladstone.

Production Planning — Workshops

The benefits gained from the introduction of production planning in workshops have been demonstrated by the success of these projects at Redbank and Rockhampton Workshops, where significant and impressive productivity improvements were achieved...
A project to introduce production planning techniques to Townsville Workshops is being undertaken by Queensland Railway Officers. The project is eighty five per cent (85%) complete. A Data General 10 mini-

Computer is installed to maintain the system.

A similar system will be introduced into Ipswich Workshops over the next two years.

Ticket Writing Machines

A project to install ticket writing machines has commenced. It is proposed to install ticket writing machines at major ticket offices. These machines will produce a ticket for issue to the customer and in addition, provide statistics on passenger business not now available to Managers.

Main Line Electrification

Benefits from Main Line Electrification will flow from reduced fuel costs and more economical workings.

However, it will be some years before the full benefits are reflected in our overall financial results although effects will commence to be felt next year.

The recent meetings held in provincial cities, where the Deputy Commissioner and Secretary, Mr. Dunning, addressed Railway employees on the future planning, have given an indication on what the future holds.

Main Line Electrification Stages 1 and 2 will bring many benefits in addition to lower fuel costs and faster transit times because of the superior traction capabilities of the electric locomotives.

The track itself is being improved with easing of curves and some regrading.

Electric locomotives are being fitted with UHF radios to allow train crews to keep in direct contact with 'control' and a new communications system using $2 million of optical fibre cable is being installed to handle communications.

A microwave communication system is being installed in conjunction with the optical fibre link.

Similarly, Stage 4 Electrification of the 475km route between Caboolture and Gladstone will bring the additional benefits of curve easing and grade deviations, upgraded communications and faster travel times.

Introduction of an intercity electric passenger service between Brisbane and Rockhampton will reduce travel time from fourteen (14) hours to eight (8) hours thirty (30) minutes.

Freight services will reduce to twelve (12) hours with gross loads increasing to 1200 tonnes from the current one-locomotive load of 760 tonnes.

Major deviations are being constructed at Eumundi, Gympie, Oakhurst and Benaraby, eliminating trouble spots which have caused problems for railway operations staff for many years.

Operators of the Rolling Stock Information and Control System (R.I.C.S.) at Railway Centre, Brisbane.

A total of 146 electric locomotives are being built for Stages 1 and 2 by Comeng Brisbane and Clyde/ASEA-Walkers in Maryborough, while twenty (20) 110 tonne Main Line electric locomotives will be specially designed to operate on the 'A' class line between Brisbane and Gladstone.

Further development of the Brisbane suburban network includes:

- Extension of the electrified service to Cleveland by October, 1987.
- Electrification of the Pinkenba Branch to Doomben by end of 1987.
- Electrification of the **Main** line to Corinda by 1988.
- Extension of electrified network to Nambour to enable services to be provided for Expo in 1988.

The Future

Undoubtedly, our future depends on our capacity to accept change. When fully installed, Main Line Electrification will give us a competitive edge if we, as an organisation, can efficiently manage the change process.

Our corporate objectives, revised in 1985 are still appropriate and I commend them to you.

Particularly, I would like to spell out the section on 'initiatives'. Although I have touched on these previously, viz:

- continuous review of operating practices and work methods.
- ensure that not only is the job done efficiently **but the job is necessary.**
- match resources to the workload.
- introduce new technology where applicable and cost effective.
- manage rollingstock fleet to meet traffic task by decreasing the gross tonne km. — net tonne km. ratio and improving wagon utilization.
- matching permanent way standard to planned traffic task.

Queensland Railways installed the latest and most powerful computer, an IBM 3090 in October, 1986. This computer will give us capacity to continue to expand our system and continuously update management control and information.

A continuing emphasis will be placed on management training particularly at supervisor level, and a programme which will develop their supervisory skills. Similarly, first line managers are now being trained and are required to qualify before appointment.

Team building training will be continued. Training of Tradesmen/Technicians will be upgraded to enable the demands of a technical age to be met.

Plans are in place to develop a well educated, trained and motivated workforce.

The Railways is a vast organization and no matter how good the management is, or how well trained the staff is, the essential ingredient to success is a lively team spirit. Unless we share the same vision, and work together in a true partnership, the bright future that awaits the Department and its staff will not be realized.

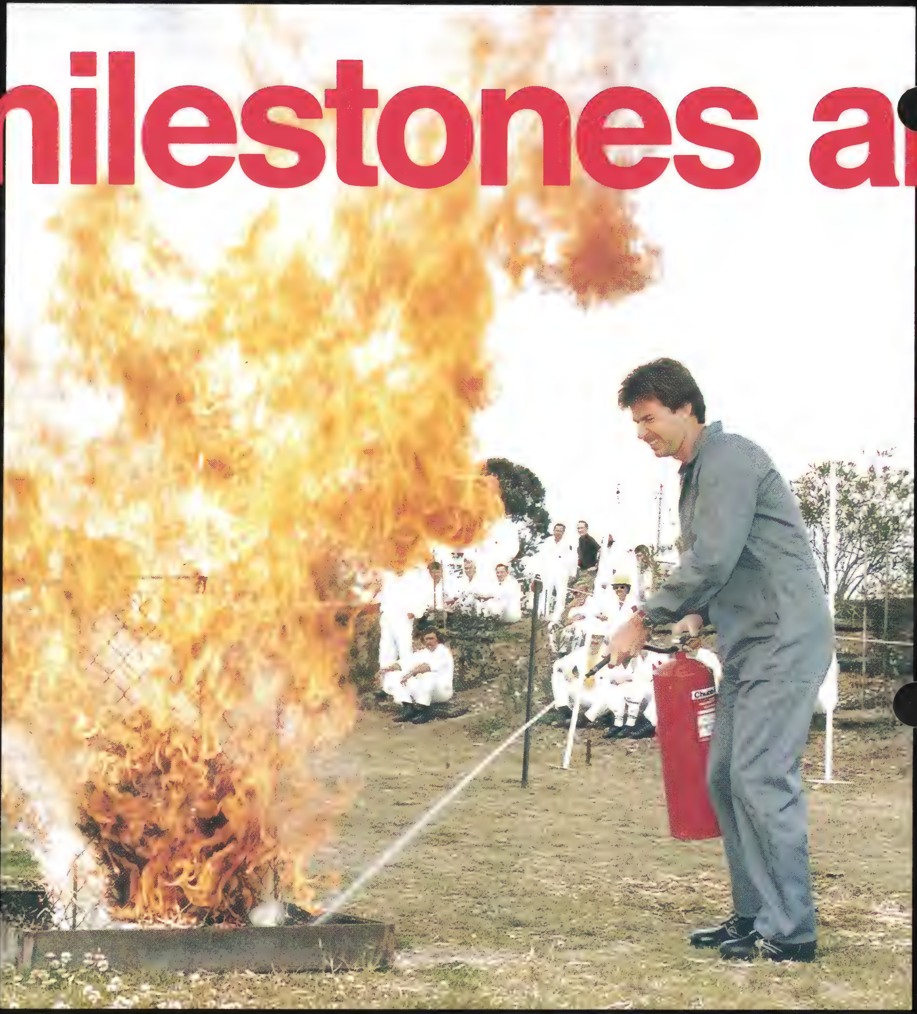
SRA milestones a

Right: Eveleigh Loco's A Team has won the State Rail Authority's fiercely-fought fire fighting competition for the first time from a field of 15 teams. Fresh from being runners-up in the NSW Industrial Fire Squad competition, the Eveleigh men blazed their way to victory at Chullora.

The Eveleigh team of Les Rhodes (captain), Phillip Jenkins, Robert Pearce, Jeff Maher and John Perry held off RMV Clyde, winners of the first two annual competitions, in a nail-biting finish.

Below: 131 years of railways history in NSW were celebrated by the State Rail Authority recently at a party on the concourse of Sydney's Central station.

The centrepiece was a giant 2 metre birthday cake, ceremoniously cut by Acting Chief Executive, Pat Johnson (pictured). The cake, with free tea and coffee, was enjoyed by hundreds of rail passengers on the station.



d manners...

When the Australian Navy celebrated its 75th birthday recently State Rail came to the party by offering free Sydney suburban rail travel to 8,000 visiting sailors.

The sailors, from 41 ships of the navies of France, U.K., Canada, U.S.A., New Guinea, New Zealand, and of course Australia, readily took advantage of the offer.

But State Rail, with its tours staff now always able to sniff out good business, set up a rail tours office exhibit on the Woolloomooloo wharf where several of the ships berthed.

And the visitors, spending as sailors will, jumped at the chance to see by rail more of the State than just Sydney. Some sailors even took the Indian Pacific train to Perth.

Two-man crewing comes

By Andrew Kennon

'The most significant event in effective work practices on trains since the days of steam'

There are currently several major projects for containing costs in V/Line's services. Two-man crewing is one such project and has resulted in a rationalisation of 350 positions and the retraining of 2000 people.

It has also involved a complete change in operational procedures.

On November 11, 1985 the first two-man crewed freight train in Victoria rolled out of Ararat on the way to Portland. It was a thirty-three wagon grain train.

By October 6, 1986 every non-passenger train in the Victorian network was crewed by two men instead of the traditional three.

With two-man crewing the duties of the second person (who works alongside the driver) are an amalgamation of duties previously divided between goods guard and locomotive assistants.

Second persons are now drawn from locomotive assistants and guards.

The position of guard has become redundant on freight trains and the use of all freight brake vans has been discontinued.

Two-man crewing is a necessary step towards the achievement of a more cost-effective rail network.

It came out of an analysis of all economic factors and work practices which were inhibiting the fulfilment of V/Line's corporate objectives.

It was the first of many planned changes in work practices and resource use across the whole spectrum of rail operations.

The project cost approximately $5 million to implement over the period from July 1985 to October 1986, most of which was incurred in staff retraining and locomotive modifications.

Savings from the project in the first year exceeded $3 million and will ultimately save an estimated $12.4 million a year (at June 1985 dollar values).

Other changes included modifications to hand-operated points at unattended stations and the purchase of new brake testing and emergency equipment.

Two-man crewing necessitated the introduction of six items of new or modified equipment on freight trains — an improved air-flow meter on locomotives, rear-vision mirrors, a modified vigilance control system, an air-brake testing device, a combined rear end-of-train marker and tail light and emergency track circuit jumper cables.

Two-man crewing has meant a restructuring of career paths in the guards' grades with the inclusion of the options of going into locomotive driver or second person streams — which means progressive retraining and upgrading of skills.

Everyone employed in the locomotive running grades must train as a second person.

The safeworking instructions have been completely rewritten to take account of every facet of the change in operations.

Shunting procedures at manned and unmanned stations have been revised as well as train documentation and radio operation procedures.

Two-man crewing has probably been the most significant achievement in the development of more effective work practices on trains since the days of steam.

The steam train required an established crew of three: the driver, fireman and guard.

Originally the guard was required to ride at the rear of the train as most vehicles on the train did not have brakes.

His duty was to apply the hand brake in the brake van in the event of a "runaway wagon" or part of the train breaking away from the main train.

With the introduction of diesel locomotives the main function of the fireman disappeared and the installation of a fully automatic braking system on all trains obviated the need for the guard to ride at the rear.

All vehicles are now fitted with effective braking systems and roller bearings are the general rule.

Modern locomotive cabs have an excellent outlook to the track and signals.

These changes had not been fully capitalised upon until the introduction of two-man crewing.

By retraining guards and locomotive assistants into a new and upgraded position of second person, it has been possible to improve the productivity of the freight network.

The duties, workload, skills and responsibilities of the guards and locomotive assistants have been changed considerably.

In some cases, abolition of the brake van has enabled one more freight vehicle to be put on the train.

It has also effected an annual saving of $2 million on the servicing and maintenance of brake vans.

Two-man crewing has been achieved with minimal industrial disputation and without the introduction of any restrictive work practices.

The project and its implementation was planned in extensive negotiations between the State Transport Authority, the Australian Railways Union (ARU), the Australian Federated Union of Locomotive Enginemen (AFULE), the Victorian Ministry of Transport and Ministry for Labour.

The project has been completed ahead of time because of the full commitment of employees, management and the unions to its success.

The role of V/Line's Priority Projects Control Department has been to develop the plan for co-ordinating the administration and management of two-man crewing and its implementation.

"Under the previous system of three men on freight trains, there was separate rostering of crews on the locos and guards in the brake van," said Alan Dockery, one of the project's managers.

"We not only had train delays at different places to change crews along the line, but the crews and guards sometimes travelled back in different taxis or railway cars.

o V/Line

"Two-man crewing functions smoothly because of the greater synchronisation of duties in running the trains. It can save so much time because everything happens on the loco. There are no delays while waiting for the guard to walk up from the rear to explain shunting movements and the like.

"The project might have been management driven but the staff are the ones who make it work.

"At first there was some suspicion of the project's team yet when they saw we didn't have two heads, the new scheme gathered a momentum of its own with extensive consultation with every regional depot.

"Most of the guards were naturally uncertain about the retraining requirements and test for second person status.

"They are now pleased about the training and are adopting a much more flexible approach to the future," Mr Dockery said.

Dennis Leviny, the project manager responsible for implementing the new operating practices said that he is very pleased with the way the changes have occurred.

"The extensive co-operation received from managers, operations staff and unions has been the main factor contributing to the smooth implementation of what must be one of the biggest changes to operations in the history of our rail system," he said.

The drivers and second persons have expressed similar feelings on two-man crewing. For the second persons the work is more interesting and satisfying; there is also more opportunity to develop their skills and for advancement in the locomotive running grades.

Guards are no longer confined to riding at the rear of the freight trains.

For V/Line customers and for the community as a whole, there is a change in perception of freight services.

They see a faster and more reliable service with V/Line improving its performance, cutting costs and becoming more efficient in its operations. They are not wrong.

High quality train network for Europe

The European Railways announced recently the launch of EuroCity, a network of high-quality trains serving the international traveller, with effect from the introduction of the next summer timetable on May 31 1987.

On behalf of the European Community Railways, Mr. Flachet, Director General of Belgian National Railways, presented the EuroCity concept to representatives of the European Parliament Transport Committee meeting in Brussels.

The announcement coincides with the European Railways' annual timetable conference being held in Augsburg, Federal Republic of Germany. The Conference Chairman, Mr. Crippa, made a statement at the joint session confirming the next timetable will include 64 pairs of EuroCity trains.

Standard-quality Trains

The trains will serve over 200 cities in 13 countries (Austria, Belgium, Denmark, Federal Republic of Germany, France, Great Britain, Italy, Luxembourg, the Netherlands, Norway, Spain, Sweden and Switzerland) and offer together some 50,000 seats each day.

The EuroCity trains include modern air-conditioned coaches and first and second class accommodation.

Catering services will be available to passengers, and on-board telephones and magazine stands are to be gradually introduced.

While travel on most of these top quality trains requires a supplementary payment, this would include the seat reservation fee.

Qualified personnel with distinctive EuroCity insignia will be on board the trains and at departure platforms to attend to passengers. The special staff training programme includes foreign-language skills.

In the initial phase, 8 sleeper and couchette services have been included for overnight journeys.

For links with Great Britain the trains are to be operated in conjunction with ferries meeting the same standards of comfort.

EuroCity trains have been selected on the basis of high speed performance. A centre-to-centre journey speed of 90 km/h will be the normal minimum. Existing and new TGV links between France and Switzerland will form part of the initial group of services.

The railways have agreed to give EuroCity trains top priority and apply stringent punctuality criteria. Great attention is being given to standards of cleanliness on trains, with special provision for cleaning en route on longer journeys.

All the trains will be identified by a EuroCity motif and distinctive names commemorating historic European figures and landmarks.

In 1985, the 14 railways★ participating in the new production launch conveyed over 42 million international passengers.

Future

The railways intend to expand the range of EuroCity trains to include new destinations but each new train must meet the same strict quality standards. It is also intended to refine further the quality criteria as new coaches and line speed improvements are introduced.

The launch of EuroCity demonstrates the determination of European railways to offer quality international services in advance of the development of a very high speed network (200-300 km/h) in the coming decade.

★ Austrian Federal Railways (OBB), Belgian National Railway Company (SNCB), Bernese Alps Railways (BLS), British Rail (BR), Danish State Railways (DSB), French National Railway Company (SNCF), German Federal Railway (DB), Italian State Railways (FS), Luxembourg National Railway Company (CFL), Netherlands Railways (NS), Norwegian State Railways (NSB), Spanish National Railway System (RENFE), Swedish State Railways (SJ), Swiss Federal Railways (CFF).

Joint venture spawns new opportunities

For Joint Venturers CLYDE/ASEA-WALKERS the $130 million contract to supply 80 25kV AC electric locomotives for the Queensland Railways Electrification Program is their first major venture together.

Clyde and ASEA have a joint licensing agreement as do Walkers and ASEA but this is the first time they are all working together and by combining their knowledge and expertise, the partners hope to become the major Australian supplier of electric locomotives.

Work on the contract began in July 1984 and involves design, manufacture, testing and delivery of the locomotives, fitting and testing remote control equipment in 19 command locomotives, fitting and testing remote control equipment for 17 locomotive control units, supply of spare parts, erection and establishment of a Commissioning and Service Depot.

The locomotives use the latest computer control system based on a 16-bit microprocessor.

The system is used for all facets of traction control and fault indication to reduce the number of relays and moving contacts.

The ASEA fault indication system complete with electronic display provides the driver with relevant information on the status of the train and identifies any potential problems.

A remote control radio transmission link also allows the driver to relay commands to the remote consist 50 wagons behind the lead.

Clyde Engineering is the Queensland Division of Clyde Industries Ltd. Motive Power.

Clyde has been in the railway business for more than 90 years and the contract has meant extensive re-organisation and upgrading of its Eagle Farm Plant where the traction motors, relay and motor contactor cubicles and power factor correction cubicles are being made.

Clyde was the first associate of the Electromotive Division of General Motors Corp. to make the GM diesel electric locomotive outside the U.S.

In 1980 Glyde became exclusive licensee of ASEA AB, Sweden for electric locomotives.

Walkers Limited has been building locomotives for over 100 years and their manufacturing facility at Maryborough, Queensland, is recognised as one of the finest in Australia.

In 1977 in a joint venture with ASEA, Walkers won the contract for the electric cars for the Brisbane Suburban Rail System. By the end of the year Walkers-ASEA is expected to have completed orders for 264 cars.

The Walkers-ASEA Joint Venture was also recently awarded a $23.5 million contract to build the 120 km/h inter-urban trains scheduled to run between Brisbane and Rockhampton by September, 1989.

To accommodate these contracts, Walkers have had to build extra facilities at the Maryborough Plant and install new technology and new manufacturing capabilities.

The ASEA connection provides Australia with Swedish technology which would otherwise be difficult to obtain.

ASEA's traction history dates back to the late 1880s and the company has participated in railway electrification programs throughout the world since 1910.

Furthermore, ASEA was the first company to produce long production runs of thyristor controlled locomotives and other vehicles.

The range of operation for which ASEA thyristor vehicles are being used shows ASEA's ability to design to cope with almost any conditions. Examples of these are the AEM-7 locomotives supplied to AMTRAK where high speed had to be met with low track forces and high demands on riding qualities and the GM 10 Bo-Bo-Bo locomotives used for low speed heavy haul on the American East Coast.

Another breakthrough for the ASEA technique in co-operation with their licensee, Electro-Motive Division of General Motors, is an order to supply up to eighty-six (86) narrow gauge heavy haul locomotives, similar to those being supplied for Queensland Railways.

Trackfast tackles fast lane for freight

The final stage of the State Rail Authority's new small freight service, 'Trackfast', was opened at the $16 million Chullora Terminal recently.

NSW Deputy Premier Mr Mulock said in launching the new service, trackfast represented the most significant change in railway freight operations in over 100 years.

"State Rail has amalgamated its parcels and small freight operations into one business."

"The result is a better system for the customer at reduced cost to State Rail. Customers will receive their goods the next day and it will be delivered 'to door'.

"State Rail is determined to win back business lost to road hauliers," Mr. Mulock said.

A feature of the new service is TRAKPAK, a $5.00, 10kg capacity carton designed like a shipping container which will be delivered 'to door' throughout the State.

Mr. Mulock said the railways have not been a traditional leader in small freight and parcels.

"However, this is changing. The new streamlined Trackfast service provides a single method of pricing for both small freight and parcels.

"It abolishes different rates for different commodities. It is simpler to understand for both the customer and State Rail staff."

Mr. Mulock said the Trackfast Centre at Chullora has been progressively expanding since it came into operation in 1984.

"It is equipped with specialised machinery for the movement of freight and parcels. Computerised sorting facilities manage the flow of over 50,000 items daily, with automatically controlled conveyors directing freight to specific loading docks."

Some of the projects we have been proud to supply include:

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Canberra Building Society Office (ACT)
Animal Health Laboratory (Vic)
Department of Mapping and Survey (Bris)
Commonwealth Aircraft Factories (Port Melbourne)
Shellharbour Hospital (NSW)
Glebe Island Container Terminal (Sydney)
AMP Building (Perth)
Woolworths State Distribution Centre (Bris)
Port of Brisbane Coal Loader (Qld)
Traralgon Shopping Centre (Vic)
Coles National Headquarters (Melb)
TAFE College (Adelaide)
Burswood Island Resort & Casino (Perth)
Australian National Passenger Terminal (Adelaide)
Co-operative Bulk Handling Silos (WA)
High Point Shopping Centre (Melbourne)
BHP House (Brisbane)
Karrinyup Shopping Centre (Perth)
Yulara Tourist Village (SA)
Roxby Downs Township and Plant (SA)
Cassidy Shaft (Goldfields) (WA)
Pieman Dam (Tas)
Sandy Hollow Railway (NSW)
Jackson and Naccowlah Oil Field Development (SA)
Hammersley Iron (WA)
Port Augusta Power Station (SA)
Palmer to Port Augusta Transmission Line (SA)
Abbot Point Coal Loader, Bowen (Qld)
Northwest Shelf Gas Project (WA)
Argyle Diamond Mine (WA)
Albany, Geraldton, Esperance Wheat Silos (WA)
Copperlode Falls Dam (Qld)
Hume Highway – Benalla (Vic)
Liquid Petroleum Plant – Pt. Bonython (SA)
Adelaide/Alice Springs Railway (NT)
Drayton Coal Mine (NSW)
Mt. Rankin Rail Project (Qld)
Awoonga Dam (Qld)
Forestry Commission Roads (NSW)
Waitara Rail Project (Qld)
Brisbane Airport Redevelopment (Qld)
Harding River Dam (WA)
Avalon RAAF Base (Vic)
The new Parliament House (Canberra)
North Head Treatment Works (Sydney)
Darley Road Bridge (SA)
Perth Airport (WA)
The Loy Yang Power Station (La Trobe Valley, Vic)
Port Hedland Airport (WA)
Webb Dock Wharf (Melbourne)
Edinburgh Airport (SA)
Tom Ugly's Bridge (Sydney)
Winneke Reservoir (Yarra Glen, Vic)
Derby Defence Base (WA)
Tullamarine/Essendon Airports (Vic)
STA Bus Terminal (SA)
Fairford Road Overpass (Sydney)
Fort Hill Wharf (Darwin NT)
Melton Reservoir (Vic)
Port of Geraldton (WA)
Merrimu Reservoir (Vic)
Queensland Sugar Board, Sugar Terminal and Wharf (Brisbane)
America's Cup Marinas (WA)
Wanneroo Reservoir (WA)
Clinton Coal Loader (Qld)
Pearce Airforce Base (WA)
Hume Highway – upgrade (NSW)
Indian Pacific Railway (SA/WA)
Orange Grove Road upgrade (NSW)
Settlement Road Project (Vic)
Burnt Bridge Creek Diversion (Sydney)
Collector By-Pass (ACT)
Golden Grove Road (SA)
Berwick By-pass Freeway (Vic)
Grand Junction Road (Adelaide)
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F4 Freeway (NSW)
Mac's Reef Road (ACT)
King William Road (SA)
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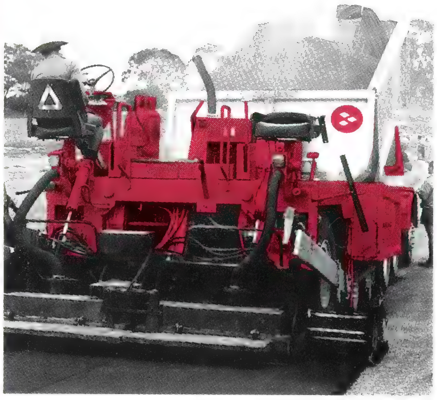

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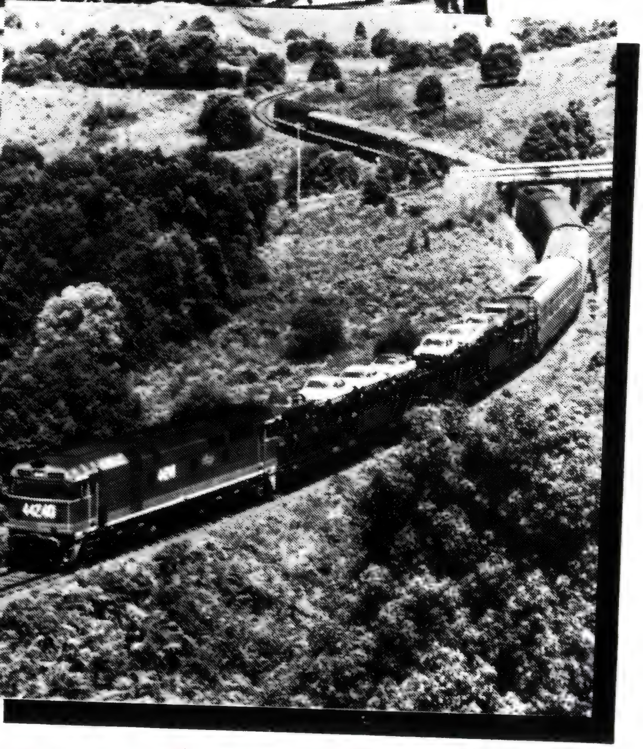

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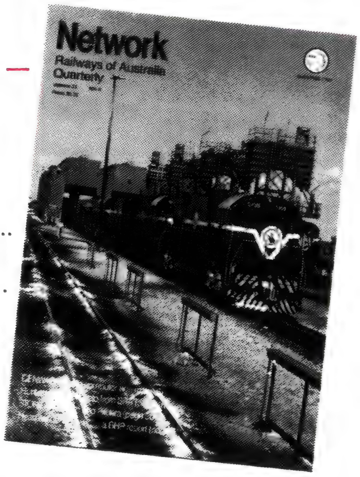

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'A most successful year for Westrail'

Behind a successful 1985/86 are the people of Westrail, who deserve the credit, says Commissioner Ian McCullough in this annual report to staff.

All over Westrail big strides were made during the year towards securing the future for our organisation. For that, many thanks go to each of you.

Each year, while visiting staff in all parts of the system, I also meet local councils and customers. I'm able to report to you that the work you are doing to build a better Westrail is being noticed and appreciated by these people.

Customers and the public are supporting us because of our achievements and because they are sharing in the benefits. Let me illustrate some of the achievements from the latest financial year.

Firstly we were ready for wool deregulation when it came on January 1 — and a good thing too because the competition from the road boys has been fierce. Make no mistake, if we hadn't created the dozen new wool centres and closed those old receival sidings our wool business would have all but disappeared.

All freight trains now run without brakevans. Apart from being much more efficient, this alone lowers our deficit by $6 million a year. The positions of guard and ticket examiner on suburban trains were combined, saving another $1.5 million in a full year.

You can see what I mean by big strides. All our appreciation must go to the staff who were involved in these significant changes to long-established work arrangements, because I know that many of you found it difficult to get accustomed to new ways.

I also thank the Traffic and Personnel staff who painstakingly worked to effect the changes.

Who would have guessed that the harvest last summer was the third biggest on record, and that we had a carry-over of two million tonnes from the previous year to haul?

A few years ago we would not have coped with such a task and we would have charged farmers million of dollars more in freight rates. But because of the many large and small revolutions in train operations — better wagons, computers, signalling and other — we hardly worked up a sweat, did we?

Grain will continue to be the driving force behind our plans to do even better. I'm afraid that trucks would take much of our traffic if grain transport was deregulated now. This won't be the case. We are heading in the right direction.

The new Midland-designed XU and XV wagons are making a big difference, as has the elimination of many staff stations where trains had to stop during their journeys.

Our track is now in excellent shape, especially so after the upgrading of the agricultural branch lines. The civil engineers are now thoroughly reorganising their branch in order to create the most efficient way of maintaining track in good condition.

The "home-grown" single track train programming system is now being increasingly used for fleeting of trains to produce more cost savings. The computer-driven system has been sold to NZ railways and to V/Line for a tidy profit.

This is just one example of how we are expanding the range of our commercial activities by selling new services and products.

Financial result in brief

Here is a commercial result, which includes adjustment for community service obligations and other aspects of the "Competitive Westrail."

	Income	Costs	Loss
1983/84	$238m	$282m	$44m
1984/85	$269m	$297m	$28m
1985/86	$267m	$292m	$25m

In this regard the great individual success of the year was the opening of Western Quarries. Many Westrail people deserve a special pat on the back, the mechanical staff, the civil engineers, the signals people, the traffic staff, the marketers and many more. Westrail's work in getting the project into production certainly confirmed to our partner that private enterprise doesn't have a monopoly on efficiency.

I am pleased to say, too, that Total West is now making a profit in its very tough commercial market.

During the year we at least received some financial return from our move from Bunbury to Picton in 1985. The first parcel of vacated land brought $2¾ million. We also agreed to sell the airspace above the City station east end for $1 million. Our costs for the engineering and signalling alterations required are being reimbursed as part of the deal.

This work includes $1.7 million which the Signal and Communications Branch is spending to update that complex part of the system.

S & CE is bringing welcome improvements to districts now through the installation of computerised telephone exchanges. Their programme of installing two-way radio in locomotives is also continuing.

On the passenger side, the new Australind train is now taking shape. When it goes into service next June it will make a real impact on South West travel. Our train and our road coach services will work closely to take a dominant role in the region.

Road Services took delivery of $2 million worth of new Mercedes Benz coaches during the year, thus becoming the first major fleet in Australia to run Mercedes exclusively.

Our interstate passenger services have been getting a lot of attention since the special IP conference in Perth. Soon they will come under a single management team, an important step in the process of revitalising these trains.

I haven't been able to mention all the successes of the past year. The ones I have included are sufficient proof that 1985/86 was a year we can be pleased with, even though we had real problems in that some of our key traffics have been greatly reduced due to outside circumstances.

Lastly we had a further financial improvement in that we reduced our Commercial deficit from $28 million to $25 million.

Behind this success are the people of Westrail, who deserve the credit. There's a tradition in our railway of diligence, quiet hard work and professionalism. Even in these fast changing and sometimes trying times, that tradition is as strong as ever.

BR Export Drive

British Rail Engineering Limited has signalled its determination to go all-out for worldwide exports with the launch here recently of its first-ever demonstration train with an audience of overseas government and railways officials.

The new train — with ten coaches based on the Company's latest high-technology International Coach — was handed over to British Rail's chairman, Sir Robert Reid, at a special ceremony at London's Euston Station.

Those present included Mr. John Moore, UK Secretary of State for Transport, and senior officials from China, Nigeria, Congo, Zambia, Indonesia, Mexico, Canada and the USA.

Based on the highly-successful Mark III coach — over 1,400 have been supplied to British Rail — the modular construction of the international coach allows it to be built in a range of sizes suitable for any railway system in the world, and on a single set of jigs and fixtures.

This reduces manufacturing costs, improves order/delivery times and provides operators with the capability of changing or replacing components in the minimum time.

Rail Industry Surveyed

In November 1985 the Institution of Engineers' National Committee on Railway Engineering approached railway manufacturers/suppliers to provide information on their operations, extent of research and development, expert orientation and attitude towards railway systems.

The results of this survey have now been analysed and a report prepared which provides recommendations to Government and railway systems. Copies of the report are also being sent to manufacturers who participated in the survey.

A major conclusion of the report is that railway research and development (leading to new product development) and the ability of companies to succeed as exporters are closely related.

Network will run a feature on this survey in a future issue.

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Club Billabong - a glimpse of 'Oz'

Railway passengers do not usually expect to hear the sounds of a kookaburra while riding on the New Zealand Railways. However, that is what I distinctly heard as I boarded a special train in Christchurch recently.

It sounded as realistic as any kookaburra that has been heard near Puffing Billy's tracks in the Dandenongs.

I was aboard the "Club Billabong Flyer."

As well as the sounds of the kookaburra, pleasant Australian folk songs could be heard over the public address system.

Inside, the carriages were attractively decorated and every suitable space carried a poster featuring an exotic Australian scene.

Ironically, this train of Australiana was about to cross New Zealand's Southern Alps to Greymouth on the Midland line which is one of the world's most scenic railway journeys.

"Club Billabong" is a New Zealand organisation which exists to promote Australia among New Zealand travel agents. Australia is the bread and butter of the New Zealand travel industry. The club was instigated by Qantas and Air New Zealand.

It receives enthusiastic support from the Australian Tourist Commission and individual State representatives.

Club Billabong has more than 120 participants which include travel agents and their consultants. Regular promotions are held throughout the year and the final event for 1986 was a mystery weekend in the South Island.

More than 170 people met at Christchurch airport early in the morning on 1 November and most of them had no idea where they would go next. The Billabongers were somewhat surprised when they arrived on the platform of the Christchurch railway station.

For some, a railway journey was a new experience. However the spectacular trans-alpine railway with its impressive viaducts and 19 tunnels — one of them the 8.56 km Otira Tunnel — proved to be an ideal introduction of rail travel.

The train was made up of seven vehicles which usually run on the popular Christchurch to Invercargill "Southerner" service. These included a guest car and buffet car. The delegates travelled in four cars.

Each car had been divided into two and the four vehicles represented eight Australian States.

During the six-hour journey to Greymouth the Billabongers attended Australian travel seminars. Most aspects of Australian travel were covered including tours, accommodation, railway and air travel.

A break was taken at the alpine village of Arthur's Pass where an excellent outdoor lunch was provided by the New Zealand Railways.

Greymouth was reached later in the afternoon. Before the evening meal there was a graduation ceremony where certificates were awarded to Billabongers who had gained a sufficient knowledge of Australian travel during the year.

The party spent the rest of the evening being entertained at Shantytown, a museum similar to Victoria's Sovereign Hill.

Around a fire in the Shantytown tearooms a group gathered and started discussing the day's events.

Included in the discussion were Geoff Grocott, Travel Promotions Officer from the New Zealand Railways; Phil Sims, Passenger Marketing Manager for Qantas; and Albert Lovell, Air New Zealand's Group Manager for Trans Tasman Services.

The two airline managers had obviously been impressed with the rail journey. Being Aucklanders, a journey across the Southern Alps was a rare experience.

Their journey was made even more enjoyable by an invitation to ride through the long Otira Tunnel, the third longest railway tunnel in the Southern Hemisphere, on one of the Dj class locomotives.

They agreed that the trans-alpine journey could have a great potential with tourists if suitable railway services were provided.

Phil Sims said the Government was already subsidising the Midland line to keep it open for the export coal traffic and he thought a passenger train suitable for tourists could be provided with only a little extra Government expenditure.

He also said that if a vintage train hauled by an old Ja class steam locomotive ran through such magnificent scenery, then the airlines would be flying people around the world to ride on it.

Australian Railways were also discussed. The high quality of Australian railway travel is becoming well known in New Zealand and some Club Billabong members had experienced travel on the XPT in New South Wales. Albert Lovell was impressed by the number of Australian railway posters he saw on railway stations between Christchurch and Greymouth.

He through it incredible that the posters on the Arthur's Pass station, which is in a New Zealand national park, all advertised Australian railway travel.

Next day the Club Billabong Flyer returned to Christchurch. On this occasion the entertainment was provided by the New Zealand Railways.

John Bennett, the Regional Passenger Manager from Christchurch, who had been involved in organising the venture, provided an informative commentary and stops were made at various points of interest.

The journey was enjoyed immensely by all the Billabongers I spoke to and I also heard many complimentary comments as they left the platform in Christchurch.

I wondered if the New Zealand Railways had ever had so many contented customers leave one of their services?

No doubt travel agents will be selling more railway journeys along with their Trans-Tasman air tickets.

Perhaps in the future we will hear of Australian travel agents chartering an Inter-City XPT and conducting seminars on New Zealand. That would also be a great occasion.

Roy Sinclair
Christchurch

. . . For the Kiwis

Store '87 to look at SA and NT

The annual Study Tour on Railway Engineering, organised by the National Committee on Railway Engineering of the Institution of Engineers', Australia, is to be held in South Australia and the Northern Territory from 20-28 June 1987.

The tour will commence in Adelaide and include inspections of facilities of Australian National and the State Transport Authority of South Australia including stations and terminal activities, bogie exchange and intermodal operations, S.T.A. re-signalling project, mechanical maintenance workshops and Adelaide station remodelling to incorporate the new Hyatt International Hotel and Convention Centre.

Visits will also be made to McKay Components, manufacturer of the Safelok rail fastening, and Comeng, to inspect fabrication and assembly of the new 3000 Class diesel electric railcars being constructed for the S.T.A.

A train trip on the recently opened tourist line to Victor Harbour with inspections of the track rehabilitation works, locomotive sheds at Goolwa and restored 620 Class locomotive, Duke of Gloucester, will also be undertaken.

The facilities of the standard gauge Glenelg tramway and O'Bahn guided busway will be examined.

The tour will move onto the "Iron Triangle" of South Australia and inspect rail gauge standardisation, mixed broad and standard gauge trackwork, concrete sleeper production and coal wagon tippler unloading system at Port Augusta and rail rolling and steel sleeper production at Whyalla.

The famous Ghan train will then be boarded for the overnight trip to Alice Springs where intermodal and other yard facilities, bridges and crude oil loading facilities will be viewed.

The tour will terminate in Alice Springs but an optional two-day tour at Ayers Rock will be offered. Full details are expected to be available in early February 1987.

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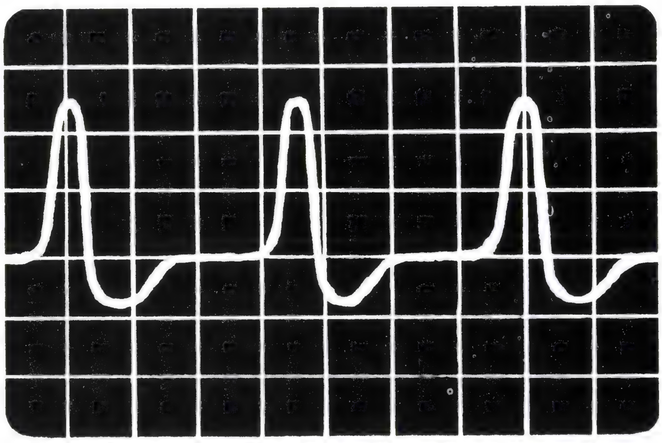

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PLANNED OBSOLESCENCE IS A THING OF THE PAST.

Once, not so long ago, some manufacturers' products were deliberately made with a very short life cycle. The idea was that they'd wear out. Be replaced. To wear out and be replaced yet again. High turnover, it was thought, meant high profits.

But times have changed. No longer can we afford to expend our energies and resources as if there was no tomorrow.

Today, more and more manufacturers are realising the cost benefits of using durable, low maintenance Stainless Steel for their production processes.

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Strategies BHP CPS 486

Working together

By Andrew Kennon

Albury-Wodonga is one of Australia's fastest growing regional centres.

It is centrally located for direct access to regional and metropolitan markets in south-east Australia and is connected by rail to all mainland capitals.

The number of people employed in Albury-Wodonga has nearly doubled since 1971. The region has been particularly successful in attracting new investment in manufacturing goods sold outside the region.

It boasts a wide range of industrial activity with 28,000 people employed in making foods and beverages, textiles, clothing, wood and paper products, chemical and building products and in materials processing and heavy engineering industries.

Wodonga is the headquarters of the north east region for V/Line's operations.

Both V/Line and State Rail of New South Wales play a vital role in the development of the Albury-Wodonga region.

There are major freight terminals in both cities and bogie exchange facilities for transferring cargo to and from rolling stock on both rail gauges.

V/Line and the Albury-Wodonga Development Corporation have jointly developed and linked to rail a container terminal at Bandiana between Albury and Wodonga.

The terminal has a hard standing area, which is securely protected and designed for container storage under Customs' control, and a depot building for accommodating Customs and Quarantine officers.

The forward plan envisages shipping containers being consigned through the terminal with Customs' clearance then railed direct to the port for shipment overseas.

Similarly, incoming containers from overseas ports would be cleared through Customs and Quarantine at the terminal and delivered direct to the customer in Albury-Wodonga, or elsewhere in the region.

Bandiana is ideally suited for rail/road and road/rail transfer of containers.

It has the space for easy parking and turning of the biggest road rigs and trailers. ISO containers can be consigned at Bandiana for next day delivery in Melbourne or loaded at Albury for next day delivery to Sydney.

Similarly, containers can be consigned to Albury or Wodonga from Melbourne or Sydney for next day delivery.

V/Line arranges door-to-door delivery of containers within Albury, Wodonga and surrounding areas.

At present, the Bandiana Terminal is subject to tender by private road freight hauliers for the operation of the complex including intermodal transfer equipment.

For the past six months Bandiana has been operated by Thomas National Transport — TNT Roadfast — who have been using a comporter for the transfer of containers until a permanent contractor is appointed.

V/Line and TNT Transport handle the giant rolls of paper in containers which are processed by Moore Business Systems Australia Ltd at Wodonga into commercial business forms and computer print-out paper.

The rolls of paper from the Associated Pulp and Paper Mills Ltd (APPM) come from the Wesleyvale and Burnie mills outside Devonport.

They are shipped from Tasmania by the Australian National Line (ANL) and transferred onto rail at Webb Dock in Melbourne.

The latest in passenger train technology stands side by side at Albury-Wodonga. The XPT (right) service in 1988. V/Line will have 25 N Class locos (left) in service by 1987.

the rail of two cities

uns between Sydney and Albury and is scheduled for the Melbourne-Sydney

This year Moores opened another plant at Wodonga, built at a cost of $7 million.

The two plants now receive about 12,000 tonnes of paper from APPM each year, 95 per cent of which is sent by rail in containers which are loaded and sealed in Tasmania.

The paper used to be sent to Wodonga by road. APPM's decision to use rail stems from a need to simplify handling and also provide a better quality product on arrival.

Handling is reduced and the paper is protected in containers which are ideally suited to transport on rail.

V/Line's big block freight trains have almost seven times the rated horsepower of the biggest road rigs and move as much as fifty, fully loaded semi-trailers.

Marketing and Sales Promotion Manager of Moores, John Griner, said the new rail/road service is much faster and more efficient.

"It enables stock to be cleared in Melbourne and unloaded in Wodonga during regular working hours.

"There is no damage in transit on rail and we have developed a reliable schedule for loading full containers and sending back empty containers through Bandiana," he said.

Albury-Wodonga is an important centre for the production of paper products and newsprint paper.

Australian Newsprint Mills Ltd (ANM) supplies the bulk of Australia's newsprint requirements. Its Ettamogah mill near Albury produces 180,000 tonnes a year.

There is a steadily increasing national demand for newsprint and ANM is already considering expanding its productive capacity by building another mill in the Albury-Wodonga region.

At present the newsprint from Ettamogah is transported on road to Melbourne metropolitan destinations.

V/Line has every intention of gaining a share of this market through its more reliable and competitive bulk freight services.

V/Line is Victoria's biggest freight mover, carrying nearly 12 million tonnes a year.

The Melbourne-Sydney corridor is the busiest for V/Line. The interstate container trains, including the overnight Superfreighters, as well as the steel trains from Newcastle and Port Kembla, and the other goods trains maintain a constant freight traffic

There are also daily freight trains between Melbourne and Albury-Wodonga and vice versa. V/Line handles half a million tonnes of freight a year into and out of the region.

Processed foods for man and animals, flour, agricultural and electrical equipment and machinery, automotive parts, fabrics, paper, farm fencing and other fabricated steel products and building materials are exported from Albury-Wodonga.

Car and truck parts, petroleum, cement, fertiliser, electrical goods and parts and other materials used in manufacturing chemical and building products, and retail goods are transported into Albury-Wodonga on rail.

Albury-Wodonga is the success story of national decentralisation projects.

The natural advantages of the region, especially its strategic location in Australia's main transport corridor, make it ideal for accelerated development.

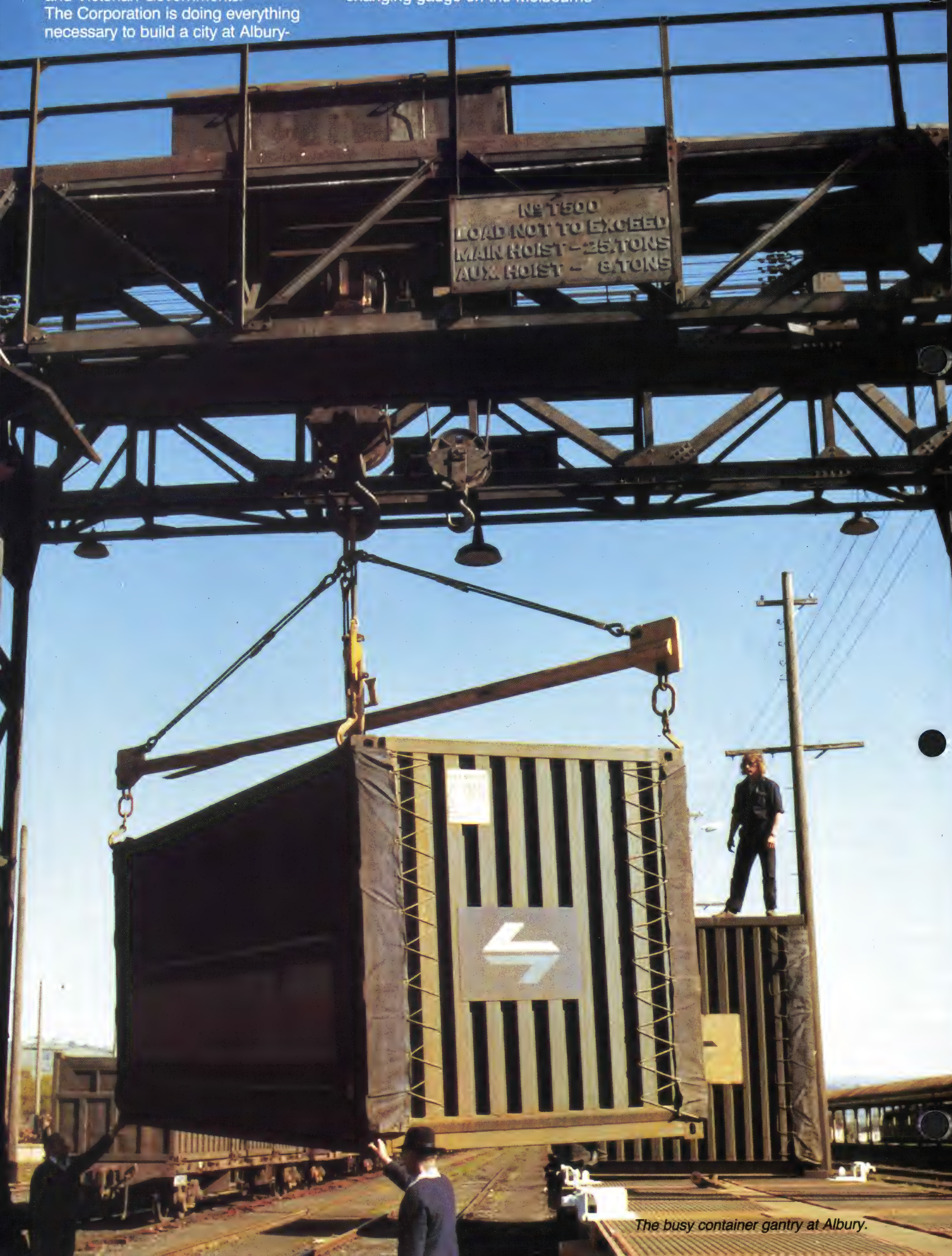
The Albury-Wodonga Development Corporation was set up in May 1974 as a statutory authority responsible for

(continued on next page)

planning and instigating the growth of the region, in accordance with the agreement between the Commonwealth, New South Wales and Victorian Governments.

The Corporation is doing everything necessary to build a city at Albury-Wodonga with a population of at least 150,000 by the end of the century.

The twin border cities that grew up last century as the main railheads for changing gauge on the Melbourne-Sydney route, will soon become one big city riding on rail into the next century.



The busy container gantry at Albury.

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Research showing the w

In 1978 the First International Heavy Haul Railway Conference was held in Perth, Australia. This Conference was so successful that follow-up conferences were held in Colorado Springs in 1982 and in Vancouver, Canada in October 1986.

One of the highlights of the Vancouver Conference was the obvious impact new technology and research is having on the operations of the American roads. This was emphasised through the conference theme, "Profitability through Technology and Operating Efficiency."

Large Energy Savings Possible

Despite fuel energy costs being significantly lower than in Australia significant research in North America has been directed towards lowering energy usage.

Detailed analyses have been performed on the effect of aerodynamic modifications, track roughness, bogie set-up tolerances (e.g., axle misalignments within current AAR standards) and lubrication on energy usage.

Train resistance, and hence locomotive fuel usage, is usually determined by the formula:

$$R = A + BV + CV^2$$

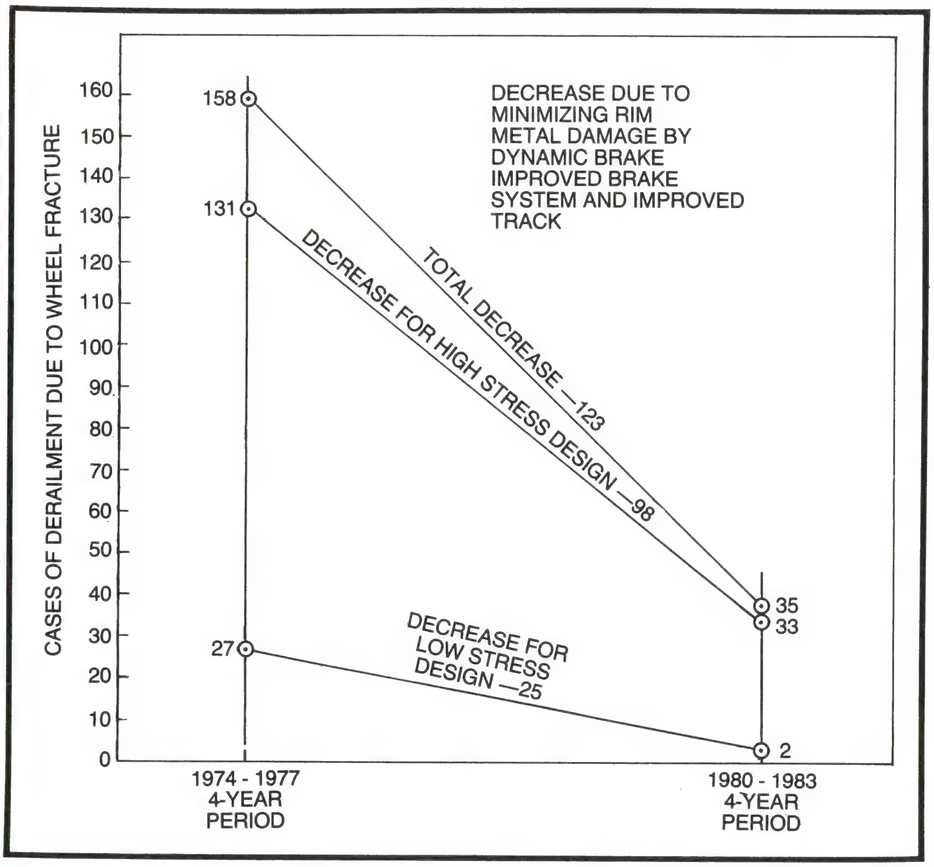
where

R = total rolling resistance,
V = vehicle speed,
A = a resistance co-efficient independent of speed, e.g. due to bearings,
B = a resistance co-efficient dependent on speed, and
C = a resistance co-efficient dependent on speed squared, e.g., aerodynamic resistance.

Aerodynamics

Perhaps surprisingly to the non-technical person an empty unit train vehicle such as a hopper car uses more energy when travelling at speed when it is empty compared with the loaded condition.

The reason for this is that when empty the rear interior of the car adds extra resistance. By streamlining (using airfoils on the ends and rounding corners) aerodynamic resistance can be reduced by around 40 per cent in an empty vehicle.



Summary of Union-Pacific wheel fractures causing derailment

Provided the gap between cars is kept to less than 1.1m there is little resistance due to the front of the car impeding the air flow. However, if this gap is increased to 2.0m the resistance may increase by up to 50 per cent.

Bogie (Axle) Misalignments

Because of the normal set up tolerances associated with three-piece bogies, which are the most common bogies in Australia, these bogies are usually slightly out of square.

Based on results presented at the conference it appears that axle misalignments are responsible for more than 40% of that portion of the resistance which is independent of train speed (the term 'A' above).

Lubrication has great potential and is being adopted

One of the 'success' stories of United States research is lubrication.

Lubrication of the rail, whether by trackside lubricators, locomotive flange lubricators or hi-rail vehicles, can substantially reduce the friction between the wheel and rail.

The effectiveness of trackside lubrication in reducing rail wear in curves has been known for many years but the work of FAST by Richard Reiff highlighted the large potential energy savings from lubrication.

Revenue service trials by railroads such as Chicago and North Western, Conrail and Norfolk Southern have indicated average energy savings of between 5-10% which more than justify the costs of lubrication.

A number of major railroads are now installing locomotive flange lubricators on their locomotive fleets, as well as placing greater emphasis on trackside lubrication.

Train Design Not Vehicle Design

One of the Association of American Railroad's (AAR) major technical development drives is the High Productivity Integral Train Project.

The key concept here is that vehicles/wagons are not designed individually. Rather groups of wagons or 'integral' trains are designed.

Using this approach it is possible to significantly reduce the longitudinal train action forces transmitted down the train.

of views

y to profit and efficiency

Tests at Norfolk Southern railroad have shown these forces may be reduced by over 70 per cent, by the use of slackless couplers, while the distribution of power through the train set can also significantly reduce longitudinal buff and draw forces.

The savings from this approach are that much lighter vehicles can be used. The benefits then come from reduced vehicle costs, fuel savings and an increased gross to tare ratio.

A number of 'novel' but still experimental vehicle design concepts have resulted from the project. Here a specifically design road/rail vehicle body is connected to an articulated bogie which provides the connections between vehicle bogies.

The advantage of this particular concept is the reduced clearance required to carry intermodal traffic on rail.

To analyse the effectiveness of these concepts the AAR both in Chicago and Pueblo have developed a number of vehicle and train models so that longitudinal train forces and bogie performance (e.g., hunting, curving) can be simulated over a wide range of conditions.

Vehicle Dynamics Research Leads to Reduced Dynamic Loadings

A major cause of track damage is wheelflats or out of round wheels.

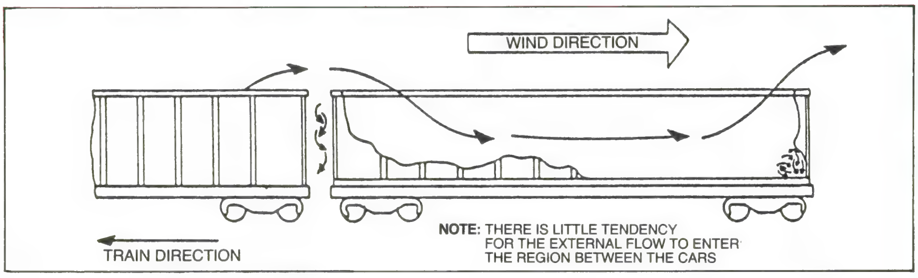
Theoretical modelling of these conditions at Battelle Columbus Laboratories in Ohio has shown that the dynamic loading of track from these irregularities may be more than twice the normal static load.

These dynamic loadings can cause cracking of concrete sleepers, increased track maintenance, increased bearing damage in wheels and as well shorten wheel life.

The solution offered by Salient Systems is a wheel detection system, which once put in place can quickly reduce the number of offending wheels by 80 per cent. British Rail, Amtrak, Conrail and a number of other American Railroads have installed this system.

Wheel Failures

The AAR is directing intense effort to reducing wheel cracking/failure in service.


WIND DIRECTION
NOTE: THERE IS LITTLE TENDENCY FOR THE EXTERNAL FLOW TO ENTER THE REGION BETWEEN THE CARS
TRAIN DIRECTION

Cut-away view of gondola car showing air flow over roof tops.

It is now well known that the discolouration rule is not fully effective in detecting wheels that are damaged, while most wheels that are discoloured have suffered no damage.

While this rule is still in place, significant reductions in wheel failures have been achieved by introducing low-stress curved plate wheels, which exhibit significantly lower failure rates than normal straight plate (high stress) designs.

As well improvements in braking practice have been significant benefits.

Railways Of Australia Research

Several of the areas in which significant potential benefits have been identified in North America are the subject of research in current ROA Vehicle/Track Study Research Programs.

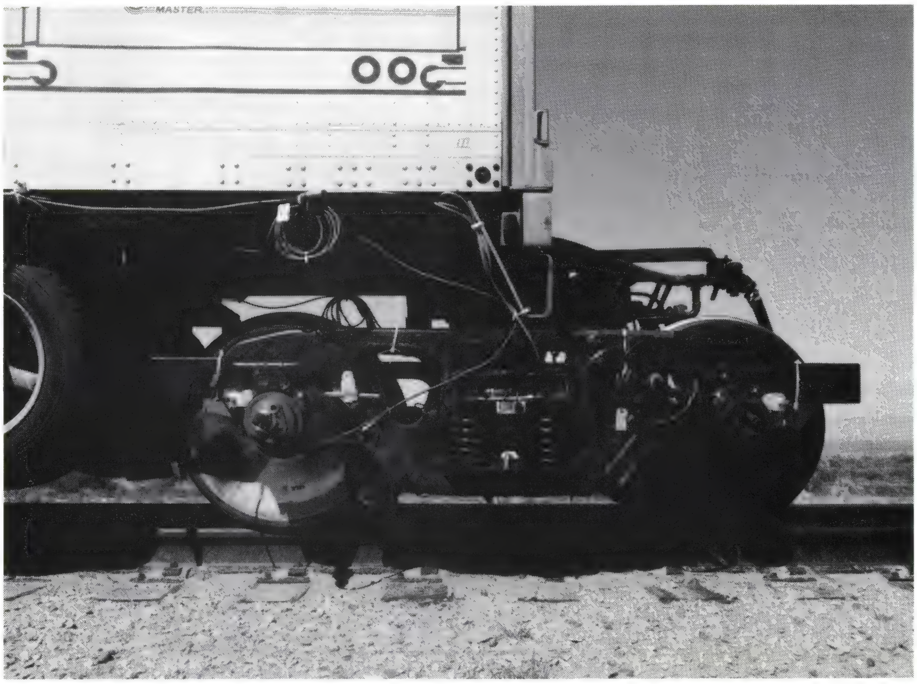
In particular Railways of Australia is receiving support from the National Energy Research, Design and Demonstration Council to examine cost-effective aerodynamic design and the possible use of aerodynamic modifications, e.g., flarings to reduce the fuel usage of unit-train vehicles.

With V/Line as project manager a study into bogie 'tolerances' has just commenced.

The aim of this study is to examine both theoretically and through service trials the influence of bogie set-up tolerances, e.g., longitudinal pedestal gap on bogie performance.

This study is utilising the technical resources of both railways and private consultants.

At this stage it is anticipated that work into lubrication will be conducted in 1987. Australian railways through ROA are also co-ordinating an investigation of new improved wheel types, and alternative methods for detecting thermally damaged wheels.



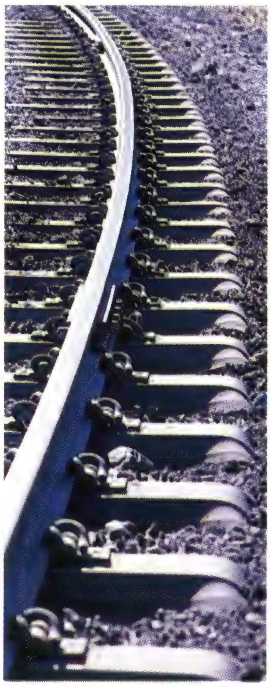
Test articulated bogie with road/rail vehicle.

Steel sleepers. Making

Redesigned from first principles, sleepers made from BHP steel are an economic alternative to timber and concrete. Some of the advantages of steel sleepers are:

Cost.
Steel is competitive with timber and concrete on a first cost basis and also offers cost advantages on an installed cost basis.

Lower Track Installation Costs.
Steel sleepers with improved fastening such as Wilclip Traklok 1 and Pandrol are lighter and have fewer components. This is particularly relevant in reducing track laying time. A gang which can lay 200 timber sleepers a day could well lay 500-600 steel sleepers a day.



Therefore, use of track possession time can be maximised on heavily trafficked routes.

Another significant advantage is that no sophisticated track laying machinery is required as is the case for concrete sleepers.

Freight And Handling Costs.
Track construction is very much a materials handling exercise. On a large track laying project, steel sleepers rather than concrete can yield massive savings in traffic costs. Ask your commercial and marketing people what this costs in terms of commitment of wagons and locomotives.

Queensland Mark Robinson (07) 223 3222 Western Australia Ian Metcalfe (09) 426 5600 New South Wales Bob Paton (02) 239 0333

tracks for the future.

In addition to this, the light weight of steel sleepers reduces handling charges.

Lower Track Maintenance Costs.
With simple 'fit-and-forget' fastenings, steel sleepers return significant savings and keep consistent gauge.

Steel sleepers have the added advantage on un-signalled track where insulation pads can be omitted.

This yields cost savings in comparison to sleepers made from alternative materials which require sleeper plates or pads to absorb impact loading which, if omitted, would lead to sleeper failure.

Insulation.
The BHP insulation system provides over 20,000 ohms of resistance between rail seats.

Long Life.
The durability of steel sleepers adds decades to design life.

Make the decision that will last into the future – specify sleepers made from BHP steel.

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The Ball Partnership BHL 2015

Carrying the cans f

By Andrew Kennon

By and large women prefer cats and men like dogs. Cats are quite independent and men seem to go for the more dependable canine species, according to the market research figures.

There are 2.7 million domesticated cats in Australia and about 2.5 million dogs. We have one of the highest number of dogs and cats per head of any country and 60 per cent of them eat prepared food.

That's where Uncle Bens comes in. Since setting up operations in 1966, they have been the driving force in developing the industry and now sell more than 200,000 tonnes a year in Australia and a further 10 per cent of that tonnage on the export market.

It's a competitive business and one that produces a commodity that is always in the top five items on the householder's shopping list.

Just look at the shelf space given to the range of tinned and dried pet foods at your supermarket nowadays!

Thirty years ago the pet food was mainly cereal-based with a whiff of 'blood 'n' bone' for colour and taste. The most self-respecting of our four-legged friends ate the butcher's spare cuts and trimmings plus the usual heart or liver (the offal) and other delicacies like mince meat and bones.

Today they eat My Dog, Pal or Chum in different size tins, or Good-O and Meaty-Bites in packets. The cats go for Dine, Whiskas or Kit-E-Kat or dried Whiskettes.

There is also a new up-market product, Sheba, which is cordon bleu cat food, available in small trays in a variety of recipes.

The canned foods are produced at Uncle Bens big Wodonga factory and the dried foods at its Bathurst plant.

The whole business is throughly researched and developed from top to bottom. Pet food has to meet the requirements of the animals and their owners.

It has to be a nutritious sustainer of the pet and not be offensive to the sight or smell of the pet owner.

It has to offer value for money and for people be not what they need for themselves but what they want for their animals.

Nearly 120,000 tonnes of product is moved from Uncle Ben's Wodonga plant to all mainland capitals each year. V/Line and the State Rail Authority of N.S.W. each bring in one train per day.

Uncle Bens has segmented the market with psychographics or psychological accuracy on the nature of the relationship between owners and their pets.

Within these segments there is a range of formulations of products with different ingredients for different tastes and nutritional requirements of dogs and cats.

There are nine kinds of Whiskas for the more fastidious cats and at least four formulations of Pal for dogs and pups, let alone all the other products in Uncle Bens range.

Market researchers forecast demand changes and product researchers and continuously experimenting with new formulations.

It's a big volume, high turnover, made to order business with just-in-time inventory management of raw materials and final product.

"Distribution costs are high," said Terry O'Flynn, the Commercial Distribution Manager at Wodonga, "amounting to $18 million a year."

"If we can save a dollar a tonne, a relatively small amount, it adds up to a big cost saving overall. We need regular and rapid despatch of up to 7000 pallets a week just to clear stocks so that there is under one shift's output in stock at the factory at any time.

"V/Line and State Rail (of New South Wales) bring in one train a day each for Melbourne and Sydney.

"V/Line takes all the export tonnage to the Melbourne docks and about 60 per cent of the domestic market product goes on rail to the mainland capitals."

At present V/Line carries up to 50,000 tonnes to Melbourne on pallets in box cars and containers.

for pets

man's best friends

The pet food product 'PAL' is an Australian household word, much of it distributed by Australian Railways.

The domestic product goes on standard gauge line to Footscray and the export product in containers goes through to the docks on broad gauge. Under a new specification plan, V/Line has a fleet of box cars used solely on the Wodonga-Melbourne run for Uncle Bens.

The vans are loaded one day, in Melbourne the next and back at the Uncle Bens siding for loading on the third day.

The plan is in keeping with V/Line's policy of improving turnaround times, guaranteeing placement on a regular schedule and improving the productivity of the rolling stock.

"Even so, it costs us less to deliver our products to Japan and Switzerland than either Western Australia or Tasmania," Terry O'Flynn said.

"Australian distribution costs are high because of the distances and relatively small markets.

"With rail there are also inherent inefficiencies in having different gauges which present problems and cost money on bogie exchange.

"However, there is no doubt that rail is more economic than road and we believe there is further scope for generating cost-savings in future once the V/Line plans have been fully implemented," Terry said.

"In Australia pet numbers are increasing in line with population growth and expansion of family numbers. There is an increasing penetration of prepared food and room for a greater market share," said Peter Maslen, Marketing Manager at Uncle Bens.

"Uncle Bens has consistently kept its price increases below the inflation rate, or consumer price index, every year, so we are offering better value for money all the time.

"We are continually developing new can sizes and formulations. The dried food market share has been creeping up and now represents slightly less than one-third of all prepared pet food sold in Australia.

"We are an efficient producer who can keep our costs below international costs and hence compete successfully overseas.

"On the Asian market there is an even greater scope for sales and we are planning ahead to export half our product to these markets where only a small minority of cats and dogs enjoy our range of foods."

Keep your freight moving and save money

With V/Line's new Superfreighter service to Adelaide **"just in time"** was never easier. Superfreighters reliability helps you avoid expensive stockpiling.

V/Line provide a direct interstate service to Sydney, Brisbane, Adelaide and Perth. Monday to Friday priority container trains speed urgent freight interstate, non-stop.

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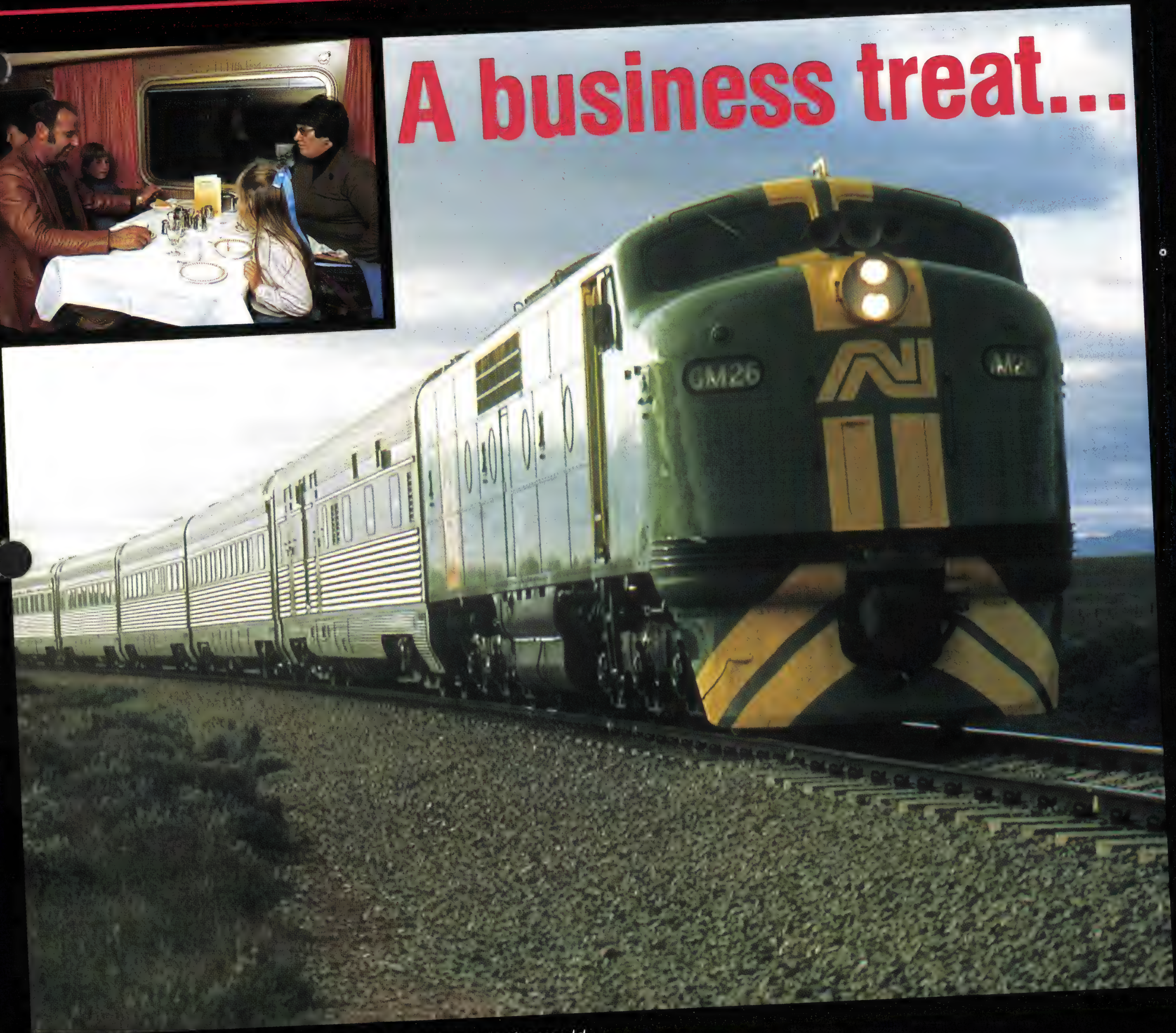


e Indian Pacific, one of the finest passenger trains in the world.

By Ian Hammond

I must admit I'm hooked on trains. And I love the broad expanse of Australia's hinterland: the rolling green fields under an azure blue sky, the brown vastness of the Outback. What better way to see it than from the privacy of a sleeping compartment or while partaking of a sumptuous four-course meal in the dining car of the Indian Pacific?

So, for the fifth time I find myself aboard the IP on my umpteenth rail trip on business from hometown Adelaide.

Interstate rail travel, for me, is a nvenient means of maximising the use of my time for Eastern States trips to Melbourne, Sydney, Newcastle and Brisbane.

A night aboard the Overland puts me right into Melbourne's central business district for a day's work before climbing aboard the express to Sydney.

And so on, up the coast and back again, a day or two in each capital, eating, sleeping and showering on the move.

As a journalist for specialist trade magazines, I appreciate the solitude of a sleeping compartment for an uninterrupted couple of hours reading or writing before I sleep.

A full breakfast awaits me on the Melbourne-Sydney-Brisbane trains (regrettably not on the Overland) — and I'm ready for a full day's work without any frantic pre-dawn cab rides to the airport, or any 'red eye special' flights to get to the next capital.

My luggage, work, cameras and film stay with me — there is no risk of my film being ruined by security x-rays, nor of my luggage going air express to where I'm not!

To bypass Melbourne, I have sometimes travelled direct to Sydney via Broken Hill, meeting the eastbound IP at Port Pirie. This time, the trip is different.

For the first time I don't have to change trains on the trip to Sydney — it's just a couple of months since the IP route was diverted to Adelaide. I have an extra three hours to work in

(continued on next page)

much

Silverton Tramway's Goodwin Alco No. 28 heads the Terowie-Broken Hill train across Black Hill Creek near Silverton.

peace instead of riding the Bluebird railcar to Port Pirie to meet the IP.

How things have changed, I muse.

It is only 21 years since I first travelled by rail to Sydney across the inland Broken Hill route. It was an enjoyable saga: three different gauges, five different trains, three systems, two different railcars and five locomotives (steam, diesel and electric).

After an all-stations run in a 4-car Bluebird from Adelaide, two nights were spent in the luxury of very old but very comfortable wooden sleeping cars.

One was on the SAR and Silverton narrow gauge Terowie-Broken Hill section, trundling sedately behind the ubiquitous 830 class Goodwin-Alco diesel, the other overnight on the weekly Broken Hill-Parkes sleeper in NSW.

That left a day for sightseeing around Broken Hill. Nowadays there is thankfully oh-so-much more for the tourist to see and do in the Silver City.

Arrival at Parkes behind a NSWGR 49 class saw yet another transfer to a short set of 'Comet' cars for the run to Orange to connect with the Central West Express — and my first ride behind the C38 Pacifics I was to grow to admire over the next three years.

Thus to Lithgow and another engine change, this time to a 46 class electric — another first for this Southerner!

Good stuff for the nostalgic railway enthusiast — but hardly appropriate even then to the needs of the interstate traveller or tourist.

In 1970, the IP changed all that, and yet it too has suffered the harsh realities of transport competition and economies. For the Adelaide-Sydney traveller, using the IP still required a change of trains at Peterborough (later Port Pirie) — a disincentive when direct flights and direct road coaches took hours off the travel time.

Today, the scene is totally different. Australian National's CL or GM class diesels, once relegated to the Nullarbor, throb out of Adelaide with the full consist of the IP in tow, bound for Sydney.

No changes of gauge, no changes of train, only a change of locomotive at Broken Hill and, for the electrified Blue Mountains section, at Lithgow.

For years there has been talk of speeding up the IP to make it more economic to run and more attractive to the time-conscious traveller. It was AN's steady upgrading of the transcontinental track from Port Pirie to Kalgoorlie, using heavier rail on concrete sleepers, that finally made change possible.

The heavier track enables faster travel year-round, and the additional time of diverting from Crystal Brook to Adelaide (an extra 400 km return) has been absorbed totally by AN's section of the IP timetable between Broken Hil and Kalgoorlie.

The move to permanently reroute the IP via Adelaide has been made to encourage additional patronage on the IP between Adelaide and Sydney by eliminating the previous change of trains at Port Pirie.

More importantly it introduces an opportunity for passenger stopovers in Adelaide, heightening interest for passengers while being a potential new source of tourism for Adelaide.

As an added attraction, this is especially important in the bid to attract more overseas visitors arriving in Sydney to use rail as a means of seeing the outback when travelling to Perth.

A passenger can now leave the train in Adelaide and rejoin it a few days later to continue the transcontinental journey.

The one and a half hour stop at Port Pirie, mainly for exchanging mail and passengers for Adelaide, has also been eliminated.

For through Sydney-Perth passengers, the detour to Adelaide adds the interest of some of the State's best wheat farming land. In winter and spring the green wheatbelt and market gardens make a pleasant interlude in the journey across the sunburnt interior of the continent.

It was also a logical welcome change for passengers travelling between Perth and Adelaide.

Together with the Trans-Australian, the IP now gives five direct weekly services, some six hours faster than

NSW 49 class diesel pauses at Condobolin with the weekly overnight sleeper train from Broken Hill to Parkes, February 1965.

Fourth change of train, to the Central West Express, brought the first glimpse of a NSW 38 class Pacific, here seen at Bathurst, February 1965.

before, and without the change at Port Pirie.

Adelaide-Broken Hill-Sydney passengers have three direct weekly services.

The changes, though, were overdue. Regrettably, past rail authorities have been too slow to adapt to changing market demands, too slow to recognise the onslaught of competition from other modes, too slow to identify poor crew training in customer relations as a major cause of unnecessary dissatisfaction among rail travellers.

Furthermore, they seem incognizant of the fact that the passenger train can be an excellent shop window on vastly improved freight operations.

The harsh jarring stops in the middle of the night, poor timekeeping, forgetful or sloppy stewards, inappropriate meal service and dirty terminals have taken their toll.

While much has been done to remedy the problems, to improve facilities and update the marketing, I venture to suggest much still remains to be done in a concerted and co-operative effort between rail managements, staff and unions if the long distance passenger train is to retain a role in Australian travel and tourism.

Meanwhile, the coach companies have had a field day in the economy land travel market and the airlines have creamed off the business market through heavyweight marketing that conveniently overlooks the early morning calls, late cabs, long check-in queues, lost luggage, increasingly wary security people, or the extra time dragging into the city from the airport.

More recently, the road coaches have attacked the business market with plush accommodation, videos, attendants and many extras.

None, however, offers the Australian National restaurant on wheels, with ever changing scenery, swift service and good food on proper china plates.

None could have offered me the past two hours of solitude away from the ever-pesky telephone, watching farmers spray their young crops, spring lambs chasing their mothers, and car travellers hassle among the heavy transports on the highway.

While those motorists flop into their motel, I'll be enjoying dinner in the diner — soup, seafood entree, sirloin steak or chicken salad, apple pie or fruit salad — while watching the sun set over the flat lonely expanse of South Australia.

If I'm so inclined, I might quaff a beer or a glass of Barossa wine, or maybe watch a video film in the comfortable lounge car before retiring for the night as the IP pounds its way toward the east coast.

Tomorrow night, dinner in the diner of the Brisbane Limited . . .

Goodwin Alco No. 28 shunts the narrow gauge passenger train at Broken Hill's Sulphide Street Station.

Surviving

eteran - the ‘Mt Washington Cog’

By a Special Correspondent

Take, as a starter, five kilometres of mountain-climbing rack railway opened in 1869. Add to it a fleet of steam locomotives all in operation, dating back as far as 1875.

Add, to all that, vintage passenger coaches — the earliest built in the 1870s.

Place all this in the heart of a very popular United States vacation area, and you have the Mt. Washington Cog Railway.

Acclaimed as the world's first mountain railway, the Mt. Washington Cog attracts annually thousands of riders from Americans spending their summer vacation in a very scenic part of their country.

The New England States are renowned for scenery, including spectacular mountains. And the White Mountains area of the State of New Hampshire with its forests, lakes and high peaks is most attractive. It is dotted with mountain trails, National Forest camping areas, and State Parks.

Lodgings and accommodations of all sorts, including historic inns, are available. A wide range of man-made tourist attractions complement the scene.

The area has been popular with holidaying Americans for many years. Nineteenth century tourists made their way by stagecoach and later by railway.

Today's visitors arrive in their thousands by motorcar — and certainly, a motorcar is a virtual necessity for a ride on the Mt. Washington Cog Railway.

The railway was the brainchild of Sylvestor Marsh who sponsored the Mt. Washington Steam Railway Company in 1865.

Construction up the rugged slopes was not easy — and every bit of material and equipment had to be hauled by ox team from Littleton, the nearest railway station 40 kilometres away.

Marsh's railway employed locomotives incorporating his patent devices for safe operation.

One was a method of applying the power to the rear axle through cog wheels, which greatly multiplied the power of a locomotive of comparatively light weight.

The other was a ratchet which engaged a toothed wheel during the ascent, preventing a downhill runaway in the case of power failure.

Switzerland has a reputation for mountain railways, and they have been developed in that country to a great extent.

But the opening of the Mt. Washington Cog anticipated the Swiss ventures — and Marsh's railway was visited in 1869 by two Swiss engineers who were working on plans to build a railway up Mt. Rigi.

The entire Mt. Washington Cog Railway is built on wooden trestle.

The average gradient is 1 in 4, or 25%. The steepest gradient is 37.4%, on a high section of trestle known as Jacob's Ladder.

The line is constructed to the unusual gauge of 4 feet 8 inches (1423mm).

A shuttle train service operates daily between the parking area and the base station proper at Marshfield, a distance of 500m.

A ride on this shuttle gives visitors the opportunity of experiencing the Cog, without taking the full trip to the Summit which requires about three hours for the round trip.

From Marshfield base station, there is an immediate straight climb to the first passing siding at Waumbek Tank; then on a curving track over Jacob's Ladder to Skyline Siding, and to the Summit House at an altitude of 6293 feet above sea level. (The parking area is at 2569 feet).

Trains are scheduled to run hourly, with additional services at peak periods — but all are subject to weather conditions.

The line operated with typical American friendliness and informality — the brakeman gives a running commentary to passengers as well as performing a very necessary duty in braking coaches on the downhill run.

Deep-throated steam whistles echo as the little locomotives grind their way towards the top of the mountain.

Each pushes one passenger coach in front, and covers the mountain slopes with fine coal particles which sift through spark arrestors and lie in heaps beside the track.

The ride is accompanied by a cacophony of sound, and the passengers seem delighted!

Spectacular views unfold as the train climbs upward. Clearly visible in the valley is the historic Mt. Washington Hotel and Resort at Bretton Woods — scene of the World War II Conference which gave birth to the World Bank and the International Monetary Fund.

From the summit itself, it is said, all of USA's six New England States can be seen.

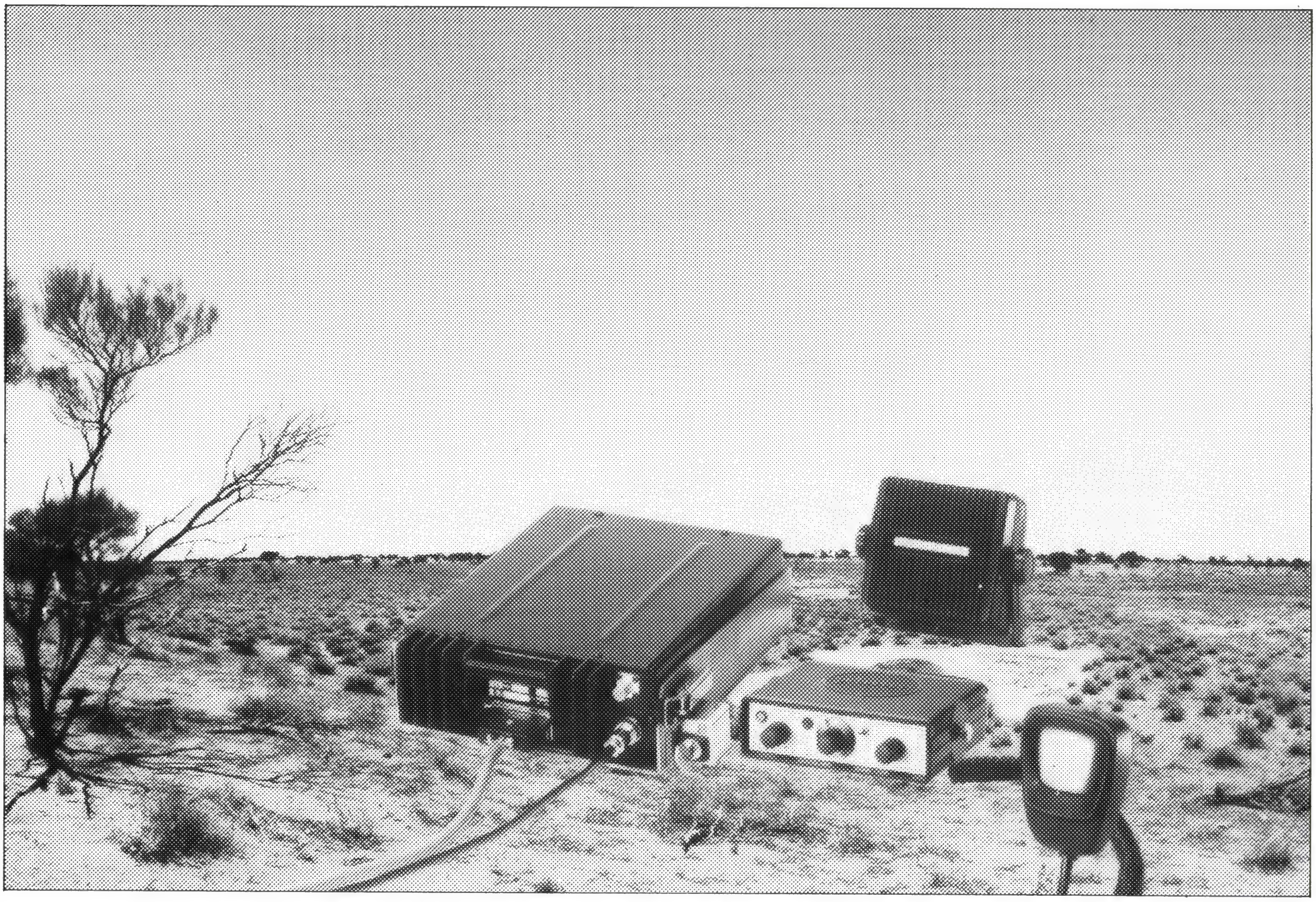
As a tourist attraction, the railway is well served with the dining room and gift shop at the base station, plus a Museum which describes in detail the line's development.

"Network" readers who enjoy the unusual, and who are fortunate enough to visit USA's north-east corner, would enjoy "The Cog."

Opposite page: Engineman's nightmare! A view of the complicated point-work necessary at all passing sidings on the Mt. Washington Cog. Each section of rail, and of cog rail, is moved separately. A skilled member of the train's crew can switch the points in just under one minute.

Inset: Locomotive No. 1, "Mt. Washington," ascending the lower part of the Cog Railway. No. 1 was built in 1883 in New Hampshire. The passenger coach was built in 1875, and is in its original condition.

The first frequency synthesized FM mobile radio made in Australia for Australian conditions:



The Plessey MTR8000 transceiver.

The MTR8000 is frequency synthesised to eliminate expensive channel carrier frequency crystals.

It has a wide band receiver and transmitter to reduce tuning controls which may vary with vibration and temperature. The automatic transmitter power output control gives consistent performance with variations of battery voltage.

The Plessey MTR8000 series VHF and UHF transceivers have been designed and manufactured specifically for Australian conditions.

The tough, modular construction means easy service. The integral mounting tray lock keeps the dust-proof unit safe from unauthorised access.

Channel capacities of 12 or 24 channels are available as standard, with options to increase to 64 or up to 400 channels if required. The MTR8000 is a professional unit, made for the professional operator. It took 2 years of local research and development to produce, and it would take more time than we have here to tell you about its many features and benefits.

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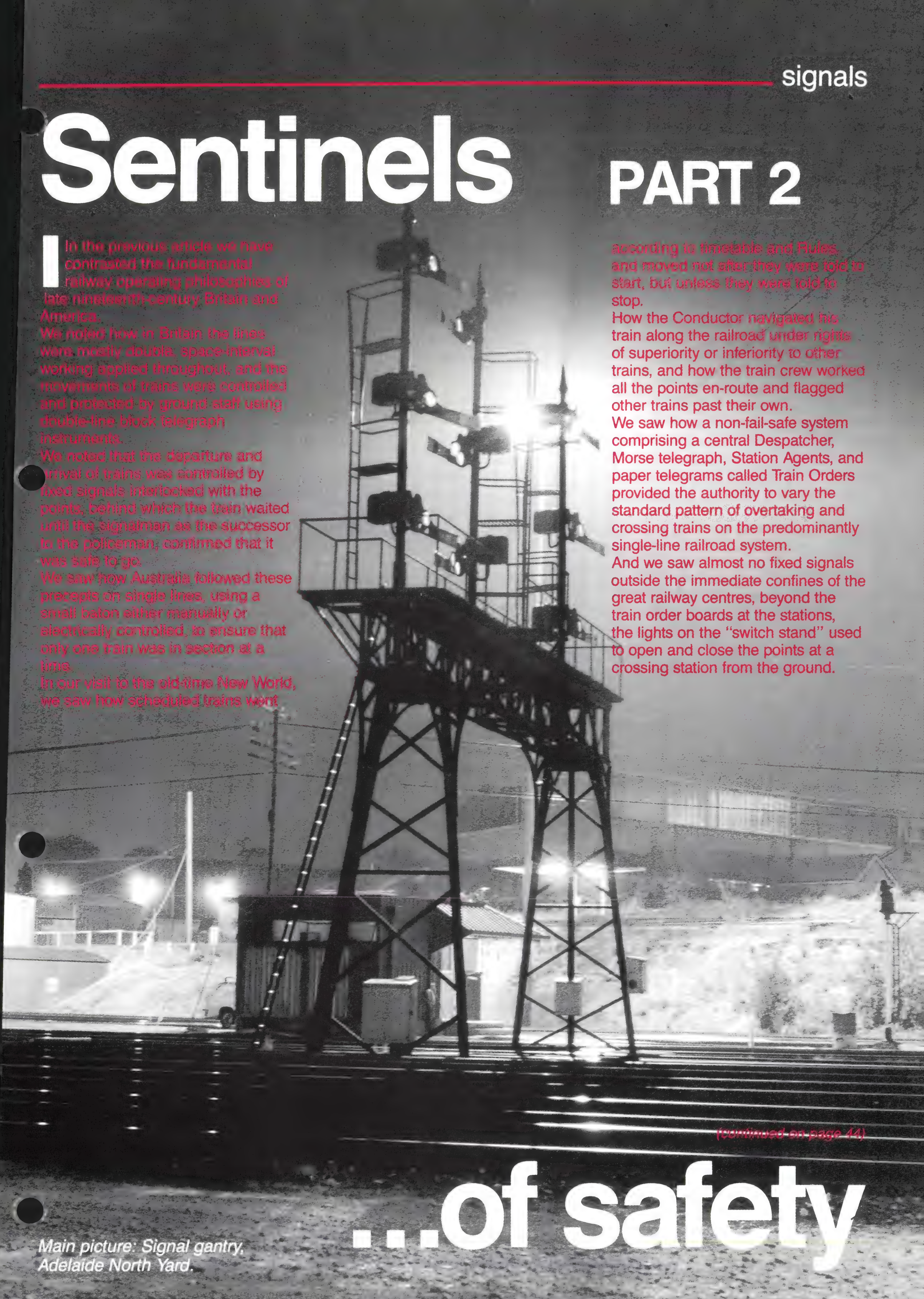


I In the previous article we have contrasted the fundamental railway operating philosophies of late nineteenth-century Britain and America.

We noted how in Britain the lines were mostly double, space-interval working applied throughout, and the movements of trains were controlled and protected by ground staff using double-line block telegraph instruments.

We noted that the departure and arrival of trains was controlled by fixed signals interlocked with the points, behind which the train waited until the signalman as the successor to the policeman, confirmed that it was safe to go.

We saw how Australia followed these precepts on single lines, using a small baton either manually or electrically controlled, to ensure that only one train was in section at a time.

In our visit to the old-time New World, we saw how scheduled trains went according to timetable and Rules, and moved not after they were told to start, but unless they were told to stop.

How the Conductor navigated his train along the railroad under rights of superiority or inferiority to other trains, and how the train crew worked all the points en-route and flagged other trains past their own.

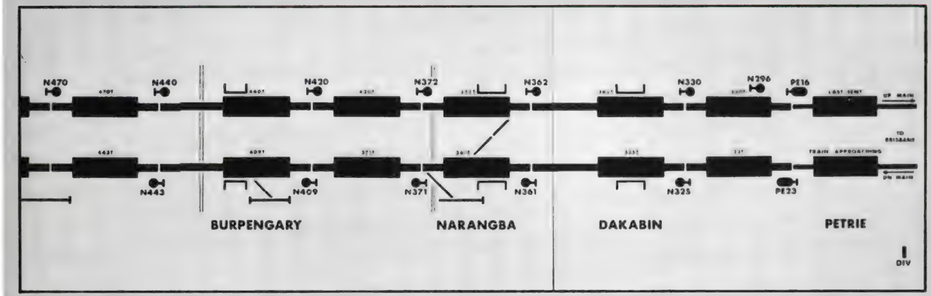
We saw how a non-fail-safe system comprising a central Despatcher, Morse telegraph, Station Agents, and paper telegrams called Train Orders provided the authority to vary the standard pattern of overtaking and crossing trains on the predominantly single-line railroad system.

And we saw almost no fixed signals outside the immediate confines of the great railway centres, beyond the train order boards at the stations, the lights on the "switch stand" used to open and close the points at a crossing station from the ground.

(continued on page 44)

...of safety

Main picture: Signal gantry, Adelaide North Yard.



In the USA, the safety hazards of the unsignalled railway carrying frequent trains first became apparent on the busy railways in the East, where double tracks appeared around 1850. Like the single lines, they were operated by timetable, without signals or absolute block telegraph working, but with telegraphic train orders and total reliance on the brakemen walking back for rear-end protection.

Early forms of English-style double-line telegraphic block were installed in the US from 1865, but the block was usually permissive and not absolute, and the rudimentary signals installed were advisory rather than mandatory, those at conflicting junctions excepted.

If a single line saturated under telegraphic train order working, with the disadvantage of time-based safety margins this option involved, the bottleneck was usually eased by doubling the line and operating it with time interval and rear-end protection, rather than by working it as a fully-signalled single line.

Station-to-station control of line occupancy using the ordinary telegraph (the contemporary continental European approach) required a full complement of trained ground staff.

The Track Circuit and Automatic Block

In 1866, primitive mechanical forms of automatic signal were tried in the USA. In 1870 Dr William Robinson, an American inventor, proposed the track circuit.

A length of railway was divided into discrete electrical sections by insulated joints.

On each section a battery applied a voltage across the rails, across which there was also connected (at the same end of the section as the battery), the coil of an electrical relay.

If a train was present in the section the track circuit was shorted out; if the rails broke, again the track circuit was opened.

There being no voltage across the coil in either case, the relay "dropped-out."

The device was thus fundamentally fail-safe, and it made possible two new opportunities:

- reminding a nearby human operator of the presence of a train that he might have forgotten, and (more important)
- having the trains protect themselves by automatically operating fixed signals to provide space rather than time-based protection.

In 1872, Robinson founded the famous Union Switch and Signal company, which is still in business, and worked with George Westinghouse to apply this technology to US railroads.

On double-lines — the first application of Robinson's invention — the engine of a train passing the signal and entering the track circuit immediately set that signal at danger. Only after the last vehicle had cleared the other end of the same track circuit, would that "entry" signal restore to proceed, permitting the following train to enter, and thus automatically protecting against rear-end collision.

Appropriately refined with an extra intermediate track circuit for holding the red to simplify description we will henceforth talk in terms of red, yellow and green lights generally, to translate as danger, caution and clear signals. Signal Engineers will disapprove as meanings differ, and "yellow" lights are usually amber. This is the basis of a modern 2-aspect (red/green) automatic block signal system.

And, with additional intermediate track circuits, the basis of today's 3-aspect (red/yellow/green) or 4-aspect systems (red/yellow/double-yellow/green, including equivalent combinations of coloured lights). A modern automatic block system is, however, about fifteen times more complicated and correspondingly safer, than the original Robinson concept.

Robinson's invention was also applied to prevent head-on collisions on single track lines. In this case the circuits were arranged not only to protect the train's rear by automatically exhibiting warning signals to any following train, but to protect the signal line **ahead** of the train by exhibiting similar signals against any **oncoming** traffic (which in theory should not have been there anyway).

The ideal setup had (moving outwards from the train being protected) one or preferably two reds, and one yellow before a green, on **both** sides of a train as it moved through a single-line section.

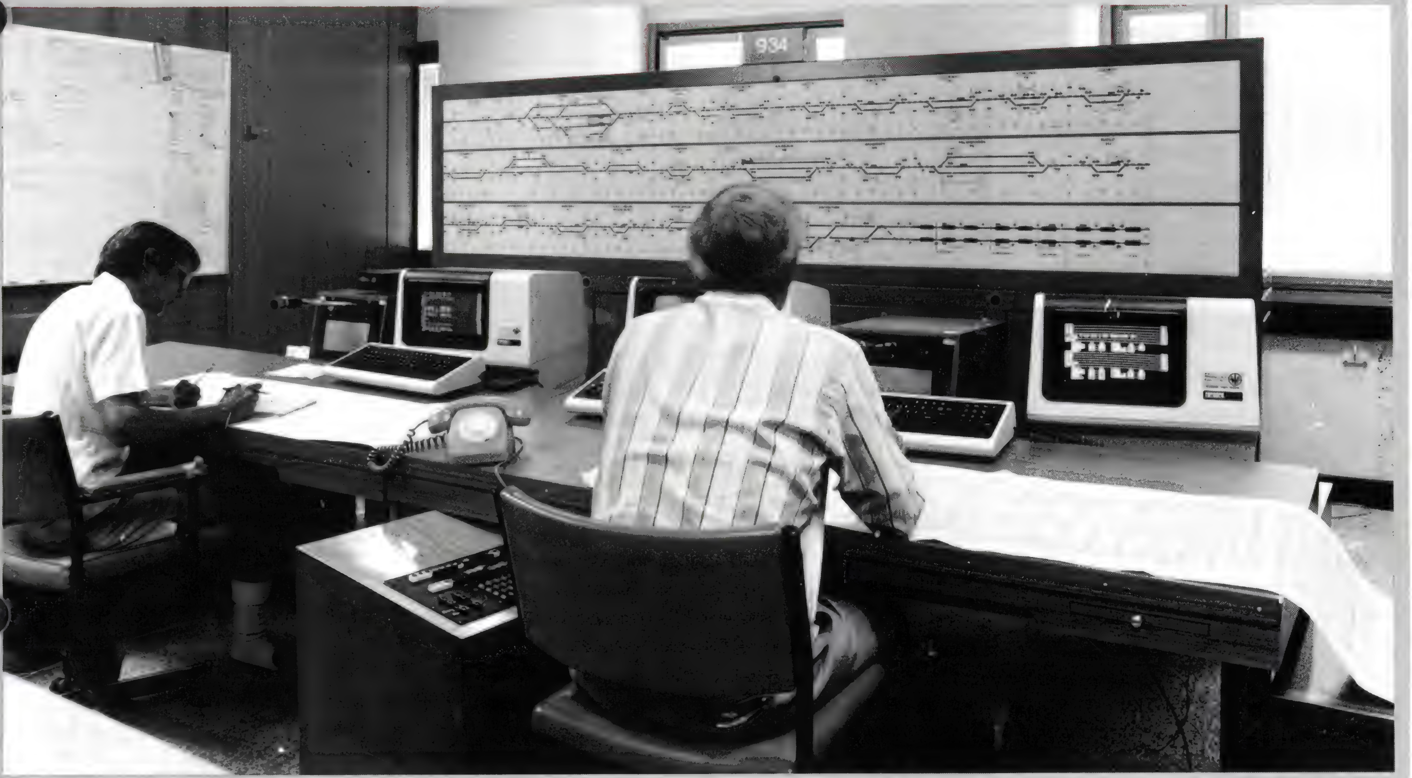
Track circuits and signal spacings were typically 3-5 km.

Additionally, by applying a simple electrical switch to the point level ("switch stand") from which the points were thrown by hand, and by appropriately arranging the signal circuits through the contacts of that switch, it was possible to extend the signal warning to protect against the ever-present danger of wrongly-set points, i.e. the so-called "open switch." This did not, be it noted, electrically prevent the points being opened immediately in front of a train that had been correctly called on by green signals.

As late as 1953 the Santa Fe managed to wreck a mail and express passenger train this way, and only three years later the Union Pacific wrecked one of its famous "Big Boy" engines and a freight train on its main line, killing the three men on the engine.

The "open switch" protection was a "block," but **not** a full electric interlocking, safety feature.

Solar power train detection equipment.



C.T.C. system control room located in Brisbane, Queensland operates the Caboolture Gympie line some 30 km distant at its nearest point.

If the track circuits were continued through a loop-line track, the basic protection also extended against a head-on or rear-end collision in what Australians would term "station limits."

All of these things were done reliably, regardless of the weather or human frailty, and in a fail-safe manner provided that the Driver on the locomotive obeyed his signals.

The only obvious disadvantage of automatic block was its cost.

And here, the contemporary British practice of double or single line block instruments and fully interlocked mechanical signals was **not** the "base case" for considering an application of automatic block signalling to a double-line American railroad.

Even on some double lines, and on virtually all single-line trackage from 1870 almost until World War II, the usual base case situation in America was one of no signals at all.

The full track circuiting and open-line signalling of automatic block was thus expensive, and seen as exceptionally expensive.

For automatic block involved frequent track circuit equipment and signals, the bypassing of all rusty bolted rail joints with electrical bonds, clean ballast kept free of weeds, batteries (which have always been a pest to keep charged) and originally, the maintenance of electrically-powered semaphores rather than colour lights.

All this had to be bought, and paid for, and a competent force of signal maintainers created to look after it.

On most railroads, this was a totally new craft before the First World War.

Accordingly, automatic block went in on only the busiest main lines first.

Just three percent of total US railway route-km had it by 1906, and thirteen percent by 1916.

Even today, after rationalisation, mergers and CTC, only about half of the American network is track-circuited, (i.e. protected to the equivalent safety level of our single-line CTC, single line Train Staff or Electric-Staff systems).

The remainder remains "dark" territory operated without signals or safeworking equipment, under train order systems but with tighter, standardised paperwork and the benefits of superior communications including radio.

Lest this comment be thought carping, a classic head-on freight train collision attributable to train order failure occurred within the municipal limits of New York City only 20 years ago.

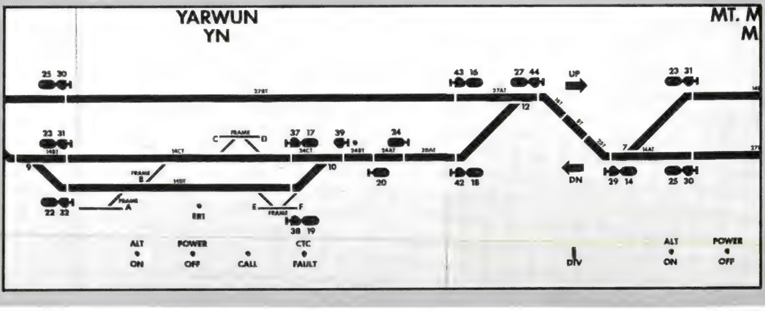
However, it must be said that today, virtually **all** the busy American railroad routes, including **all** those carrying passengers, are today track-circuited and properly signalled to safety standards that Australian railways would accept.

Today's standards are not, however, the original standards for automatic block, which came none too soon.

Few Australians appreciate the density of American main-line traffic in the days before the motor car, particularly on important inter-city lines in the Eastern US.

All automatic block was "permissive" on the open line — the Driver could pass a red signal and proceed at (in theory) a slow speed up to any obstruction.

The first rear-end wreck on double line automatic block occurred in 1880, just eight years after it was first applied, and it took another three decades for the signal engineers to have a



reasonably watertight system in general use under heavy fast traffic. By World War I, American passenger trains were moving at a mile a minute, with a train a mile on the busiest lines in the East. Including the big steam engines virtually all of these trains weighed 600-900 tonnes, and the Drivers were expected to thrash the passenger traffic through — on time, and regardless of the weather. Generally, they achieved it safely, but not always.

Inadequacy of Advanced warning

In a bad wreck at Wallingford, Connecticut in 1913, the New Haven Railroad's First No. 95 the **White Mountain Express** overran the halted Second No. 91 the **Bar Harbor Express** on an early (around 1890) double-line automatic block installation.

That signal system had given the **White Mountain's** Driver a steady succession of greens, just one red light of warning, and three car lengths' overshoot before the impact.

His engine ran through another three cars and took 21 lives before it stopped.

Later that day, President Woodrow Wilson's train was flagged past the wreck in which the sons of many socially prominent families known to him had been killed.

The New Haven had a bad Press that day, and it is symptomatic of the attitude of US railway managements of the period that even with so patently defective an automatic signal installation, so totally lacking in advance warning signals, the New Haven's managers (who would have been well aware of the importance of the distance signal's warning from their visits to England) were quite prepared to schedule **five** passenger trains through in **fifteen** minutes.

They required their staff to hold that schedule in spite of fog, and expected the brakeman of the halted **Bar Harbor** to protect the rear of his train with a lighted fusee (a slow burning firework) and detonators.

The **White Mountain's** brakeman claimed he was 150 metres in rear when he did this; the **Bar Harbor's** Driver claimed he was but 30 metres in rear.

Nobody seems to have appreciated that, automatic block notwithstanding, the philosophy remained fundamentally unsafe; that such an installation would never have been passed by a British Board of Trade Inspector when it was put in; and that had an accident occurred in Britain under even remotely comparable conditions the railway's Directors would have joined their Signal Engineer in the dock of a police court.

After accidents, the contemporary British railway companies were often roundly criticised by their own Press for not installing Robinson's automatic block on their double lines.

The invention was in 1870; the first UK application at Grateley (on the London and South Western) was not until 1903 with lower-quadrant semaphores arranged as classic home and distant signals, worked by track circuits and activated by compressed C02 gas.

But there was merit in the British counter-argument, that with a signalbox and a signalman needed every few kilometres to work the points anyway, manual block (or its high-density successor, lock and block) was iust as safe.

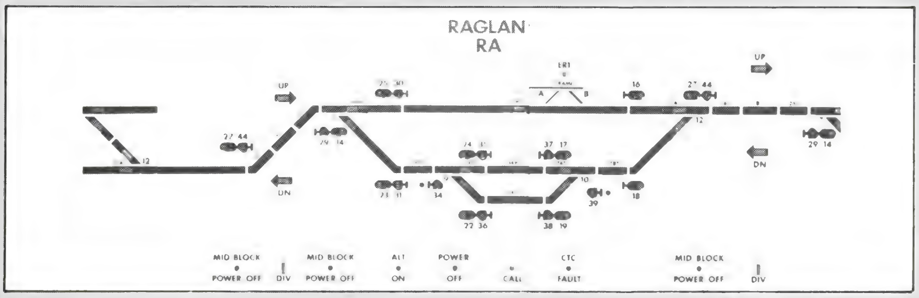
It was certainly safer than the New Haven installation at Wallingford.

Less justifiable was the British refusal to use automatic block on early electric underground lines.

The Central London Tube of 1900 was mechanically signalled with small **gas-lit** semaphore spectacle glasses.

Nor did the British apply the colour light signal, which is far more visible and will cut through fog, until 1920 (Liverpool Overhead Railway, 2-aspects).

The first UK main-line 3-aspect colour light installation was in 1923, and the first 4-aspect (today's BR and QR standard) in 1926. NSW had colour lights before this.



Single Line Automatic Block in the USA

On single lines, there was another fundamental difference between the US automatic block philosophy and that of England and Australia, where electric Train Staff (tokens) remained in use.

In America, **train orders still remained** after automatic block. The Despatcher still decided where the trains would cross, the Station Agent still had no direct control of the trains, and there were still no starting signals advising against unauthorised departure from a station into the single line ahead, when an oncoming train could (in system safety terms) already be in the section.

Not until the two trains both encountered their first yellow (with two aspects, their first nod) from the automatic block would their Drivers wonder whether something might be amiss.

And those yellows — and even the reds that followed them — were still totally permissive.

On some early single-line installations engineered a'la Wallingford two trains could pass the yellows at 55 km/h and in theory, collide head-on at the next pair of signals, each opposite the other and each stoutly showing its red in the appropriate direction.

And the margins of only one red, a single missed signal could still mean disaster.

The first head-on smash under single-line automatic block occurred as far back as 1892, twelve years after the first rear-end collision on double line.

As well as installing ever-safer and better automatic block, American signal engineers installed full interlocking of points and signals at their busier junctions and city stations — at first with English-type mechanical equipment, and later with "power" frames, in which the interlocking was mechanical on the lever frame in the "signal tower," but the push that actually moved the points or worked the signal arm was electro-pneumatic or electric. (This was one American system the English and the Australians did take up, with great gusto).

The signals protecting these interlockings were always absolute, i.e. non-permissive and even today can still be identified by their arms or colour lights being set directly in the same vertical line, instead of being set one slightly to each side of the signal post, the classical identification of the "permissive" block signal.

As train speeds increased, so did the need for further advanced warning and more signal aspects, until some US railways had a vertical row of three lights, each of which could sometimes be red, yellow or green, with one indication each for high, medium and low speed running.

This formed the visual basis of the American "speed" signalling philosophy. Under this philosophy of "keep going." stop is a permitted minimum speed of zero.

This was distinct from the UK philosophy of absolute block throughout (on passenger lines), the principle of "stop until you are told to go." In this "route" signalling, the signal aspects primarily convey **not a speed instruction** (which might include a speed instruction through the points of a junction) but an indication of whether the line is physically clear or not, and what the next signal will show, with paths through junctions **route-indicated.**

The Driver must learn and know the route and the signals, whereas on a speed-signalled railway he could (in theory) adjust his speed according to the signal display alone, and drive on an unfamiliar line, e.g. if diverted.

The British made only one experimental installation of speed signalling, at Mirfield on the Lins Railway in the 1920s. It is to the credit of the British that their standard 1926 system of 4-aspect colour light signalling (green, double-yellow, single-yellow, red) has stood the test of time and versatility, ranging from the busiest suburban electric network anywhere, to 200 km/h main line operation.

And the only additional aspect needed for faster operation is a flashing yellow to indicate junctions — which are protected by a timed-approach speed check.

Under this system, a Driver never has to pass a red light; the British always placed great store on this principle.

One wonders, therefore, whether all the complicated multiple-light signal aspects were really necessary to run the railway.

It is interesting, too, to note that the simple UK system of colour lights aspects did not arise as a standard chosen by the Chief Signal Engineers of the four British main line companies (IMS, LNER, GWR, SR) after the 1922 amalgamation of their 123 predecessor companies. Nor was it a standard imposed on them by Government.

Solar power control equipment with batteries.

It was a standard that was developed, after great and contentious debate, in what amounted to a code of practice committee of a learned society — the Institution of Railway Signal Engineers.

Centralised Traffic Control

We have seen that on single lines, even those using automatic block signals as a **protective** system, the **regulation** of traffic in the USA, i.e. the decisions on which train crossed what train where, still remained with the Despatcher.

And at most country crossing loops, the points remained hand-operated, usually from the ground and by the train crew.

The consequent delays from halting trains, and the costs of ground staff to avoid this, led the Americans to ponder whether it might be possible to speed-up the whole operation, and co-ordinate it better.

By operating the points electrically and using the automatic block signals to **control** the trains (instead of just protecting them), the objective could be achieved without the cost of ground staff, which the long-established British systems of mechanical signalling at crossing loops had involved.

This led to the introduced modern concept of regulating traffic by co-ordinated central control of all the signals on a line.

CTC involved basically three new departures, all of which brought, for the first time, the classic US single-line automatic block system up to the full standards that British and Australian signal engineers would today find acceptable for busy single-track main lines handling heavy trains at express speed.

First, CTC replaced the ground-thrown points at the end of the loop with a miniature, but in terms of protection of full-scale junction-type interlocking of the nearby points and signals.

Secondly, CTC added proper starting signals (main line and loop) to each end of a crossing station, which the British approach had always provided but the American one hitherto had not (simply because there had been nobody on the ground to operate them).

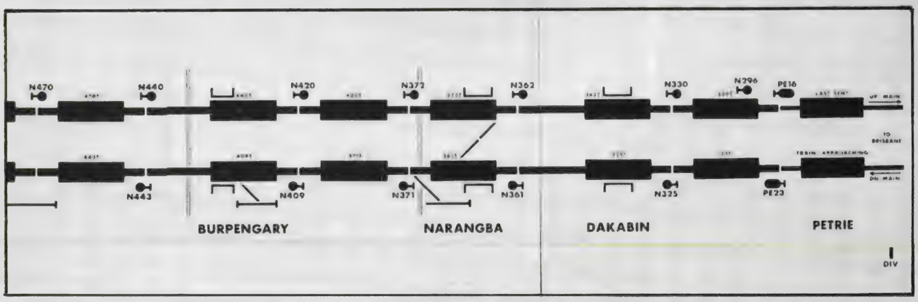
Third, CTC provided (on most installations) the option that having nominated the direction of train movement through a section, not only the **starting** signals at the remote station would be red, but any and all **intermediate** (i.e. mid-section) signals encountered would also indicate danger.

This greatly reduced the statistical risk of accident from an improper start.

There were four technical problems to be overcome with CTC. First, the miniaturised power interlockings would have to be all-electric, which in 1926 meant battery-powered. C02 gas (a la Grateley, LSWR 1903) caused corrosion, and compressed air was not an option in remote rural locations, only some of which might have electricity.

This meant the use of electrical relays for the interlocking function, and not some mechanical form of interlocking frame.

(Continued page 48)



Computer equipment in Townsville for Abbot Point-Collinsville C.T.C.

Secondly, the battery power demands would jump considerably. The heavy point-blades would have to be physically moved not by the burly brakeman's muscle, but by a hefty electric motor instead.

This pulled much more current than signal lights being switched on and off, or balanced semaphore arms being wound up to clear, to fall back under gravity to the caution or stop position.

Third, there would need to be a form of telemetry between the Despatcher's office and each remote signal-equipment location.

It would need to discriminate absolutely and reliably between each controlled function, at each end of each station. The limited number of functions that the telemetry could cover initially limited the length of CTC territory (or more strictly, the number of crossing loops).

Finally, the despatcher would need to know exactly where all the trains were.

These requirements were solved by redesigning established forms of electric point motor for low-voltage (which for the same power, means high-current) operation.

Later, a signal power supply was provided along CTC routes from either a separate electrical distribution system or remote diesel-generator sets, including back-ups, alarmed for failure and controlled by the telemetry.

Established principles of track circuiting, electric detection of the correct throw of point blades, and electric locking of facing points were applied.

They were combined with established all-relay principles of electricity-interlocking the points and signals.

The track circuits reported the position of trains by extinguishing lamps on a panel in the Despatcher's office.

The telemetry system — which covers only the "non-vital" or command and reporting-back functions, and never the "vital" safety functions that prove correct operation and interlocking — was initially conceived along the lines of an automatic STD telephone system.

CTC soon switched to pairs of "reed relays," mechanically tuned to each other and no other pair, and finally to modern digital electronic multiplexing.

The telecommunications engineer proved a great friend of the CTC signal specialist. Indeed, only his borrowed technology made the idea possible.

The introduction of electronics to communications sped-up the operation considerably.

On early CTC schemes it could take the Despatcher several seconds to throw the points and clear the signals to set up and prove safe a desired movement at one location.

During this period no other commands could be sent to/received from other locations.

However, these electronic developments required a superior quality of telecommunications link, and abandonment of the old open-wire telephone/telegraph pole route.

Pole routes had been adequate for earlier British-type systems (single-line Electric Token Instruments) and for the classic American single-line automatic block systems, both with control telephones, but not for the CTC that replaced both.

So the case for a CTC scheme had to carry these extra costs. Buried underground cables and (today) fibre optics are used. All gave improved efficiency but at higher capital cost.

Thus CTC was justified not on the grounds of improved safety, but on those of fewer signal staff, superior line capacity, and the general speed-up that goes from more efficient traffic regulation.

Great indeed was the rejoicing of the manufacturers of signal relays, cables, and carrier telecommunications equipment.

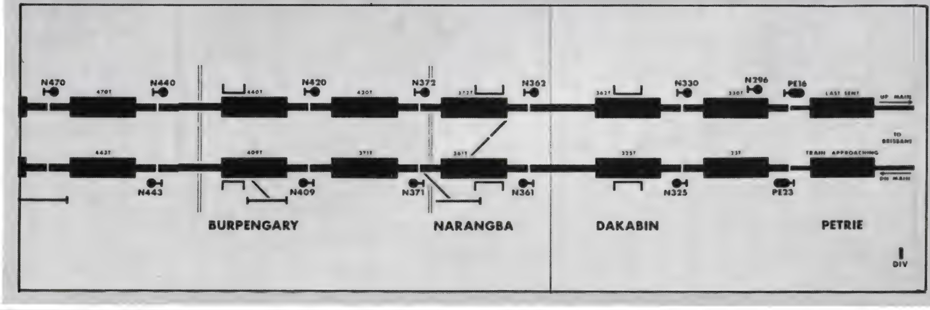
CTC also required a control panel in the Despatcher's office.

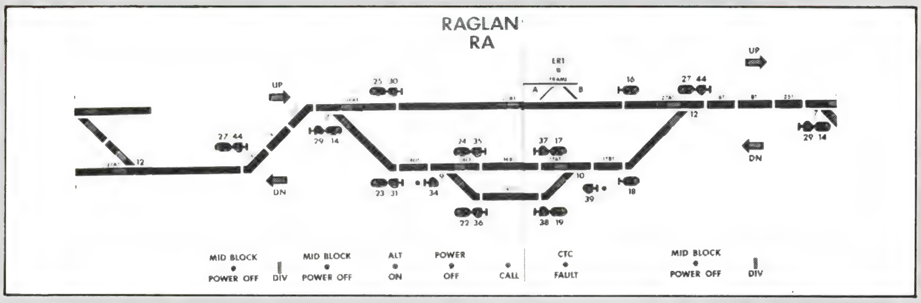
As the capability of CTC system grew in terms of distance/number of stations, so these panels grew with it — to inordinate lengths (and costs) before the introduction of colour video units (resembling TV sets) on some of the latest installations.

The development of the computer in recent years, lent impetus to automation of train identification, train movement recording, and identified display of specific trains by timetable number, called "train description."

Eventually the computer allowed substantial automation of the actual control function, including traffic handling/prioritising decisions, and automatic crossing at a location isolated by a telemetry failure — always with full safety.

The very latest applications of CTC equipment could run almost unattended, with little modification.





But we are running ahead of time, for CTC as such is almost 60 years old. The first installation was commissioned in Ohio on a 64 km sector of the former New York Central (NYC) Railroad between Stanley (near Toledo) and Berwick, in 1927.

The Depression slowed the installation of CTC in America, but the system achieved its full flowering of main-line performance and recognition during the World War II in handling heavy military traffic for the Pacific theatre over the Santa Fe main line to the West Coast. The other major element of this, perhaps the prototype of today's modern single-track intercity railway, was the EMD-GM diesel-electric locomotive, a large fleet of which was drafted onto the Santa Fe (despite competing demands for naval use of the 567 series locomotive diesel engine). Only the later benefits of train radio and computerisation were lacking at the time.

Extensive postwar CTC applications followed throughout the US and Canada and today, almost all key trunk routes in North America are CTC-equipped purely for economic reasons.

Most form high-capacity single-track railroads; some are improved single tracks replacing former double lines; a few are reversible 2-track lines which have replaced former undirectional quadruple trackage (e.g. the old NYC New York-Chicago Hudson River Route).

The longest CTC route controlled from a single despatch office today is believed to be the Illinois Central-Gulf Railroad's Chicago — New Orleans line — the 1490 km route of a train made famous by Steve Goodman's blues song and today Amtrak's Train 59, the **City of New Orleans.**

CTC has been extensively applied by UK-oriented signal engineers in South Africa, on the old Rhodesian Railways (a very large scheme) and in New Zealand, which is now well into its replacement second-generation CTC, the first CTC having replaced single-line automatic block with colour lights. We have little to teach the Kiwis on the benefits of CTC signalling.

Here in Australia, CTC exists west of Kalgoorlie and very extensively in the SW of WA (Westrail); on the Hamersley and Newman iron-ore line in the Pilbara; and on long stretches of AN in South Australia.

In Victoria there is CTC from Melbourne to Geelong, Ararat and Serviceton (soon) and to Albury (on the standard gauge, since 1962 and with second-generation controls recently installed).

In NSW CTC exists from Albury to Junee with very soon, double-line automatic block throughout to Sydney, Newcastle and Maitland; from Maitland there is CTC to Werris Creek, and to Taree, Grafton and (in due course) Brisbane.

On QR, CTC exists on all key heavy-haul coal routes after (the double-line CTC on the Hay Point line is soon to be commissioned); there are long CTC stretches on the north coast line now, in a few years CTC will reach up the coast from Brisbane to Townsville.

QR's Rockhampton CTC centre is probably the largest in the country today, controlling four groups of lines, each with a different generation of CTC equipment. Every railwayman should try to visit this very instructive installation, which on the Gladstone/Rockhampton section has worked 50-60 trains daily and reached almost 70 trains — all on a single line.

CTC has given dramatic improvements in line capacity and productivity.

And with CTC, the two divergent lines of thought have come together.

The ultra-conservative British, with their absolute block, meticulous interlocking and hitherto heavy demands for ground staff, have merged in system safety with the previously happy-go-lucky, press-on-regardless Americans with their despatcher-controlled, paper-based train order system, their general absence of signalmen, and their successive developments to protect against the weaknesses of paper-based systems.

With CTC and modern automatic block, there is little to choose today in the fundamental protection given by any of the four railway signalling approaches: English, American, Continental or Australian. And with double-line automatic block, our system remains safer than most others. Whether we are aboard the **Aberdeen Sleeper,** the **Broadway Limited,** or the **Queenslander,** we can sleep the kilometres away confident that even if there is an occasional bump in the night, we will not wake up to find a railway locomotive occupying the lower berth, because the signal engineers got it wrong instead of right.

(In the third article of this series we will examine some of the systems used to provide additional safety protection).

Loop points at C.T.C. crossing loop (Oakhurst on N.C.L.) equipment room on left.

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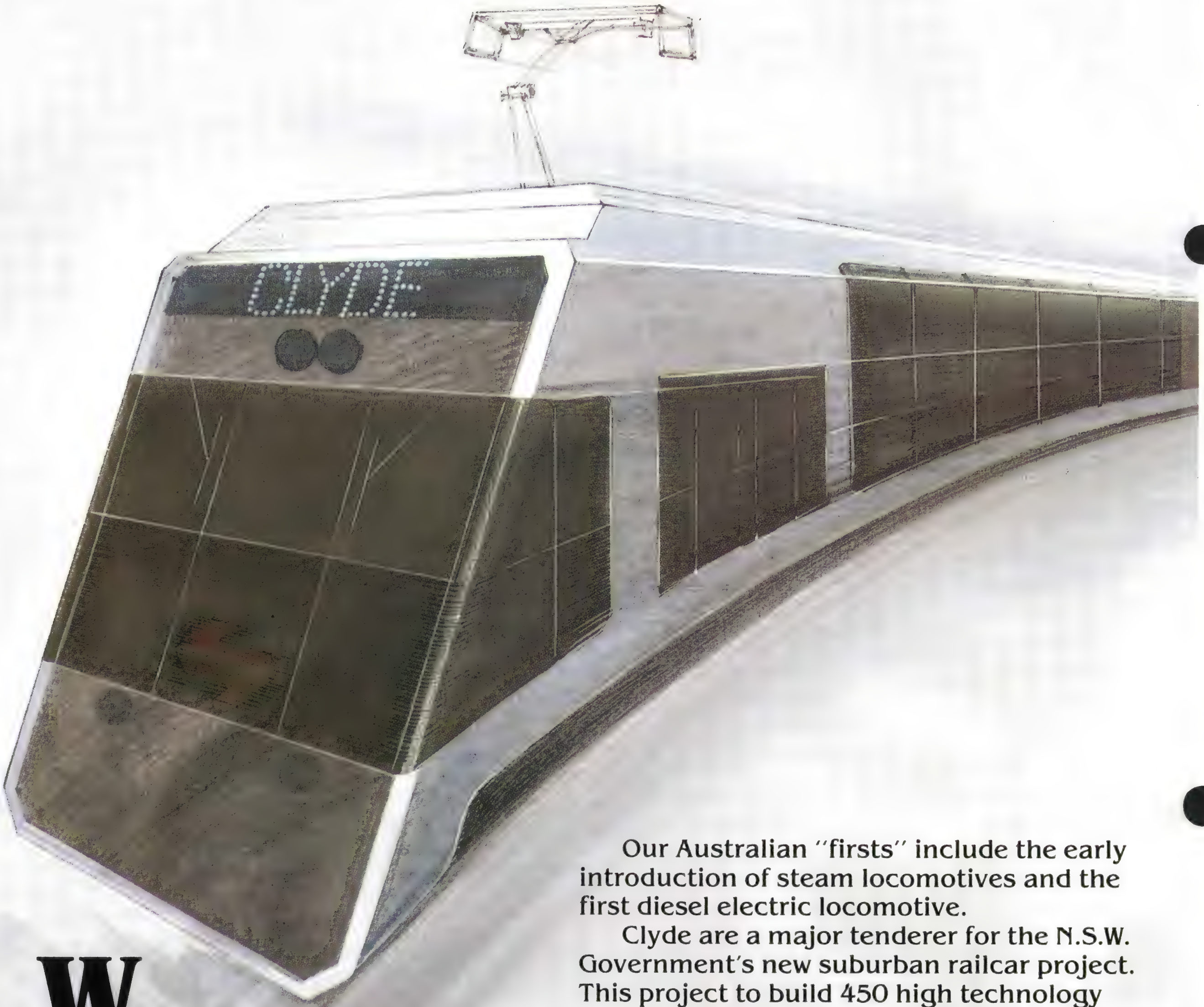

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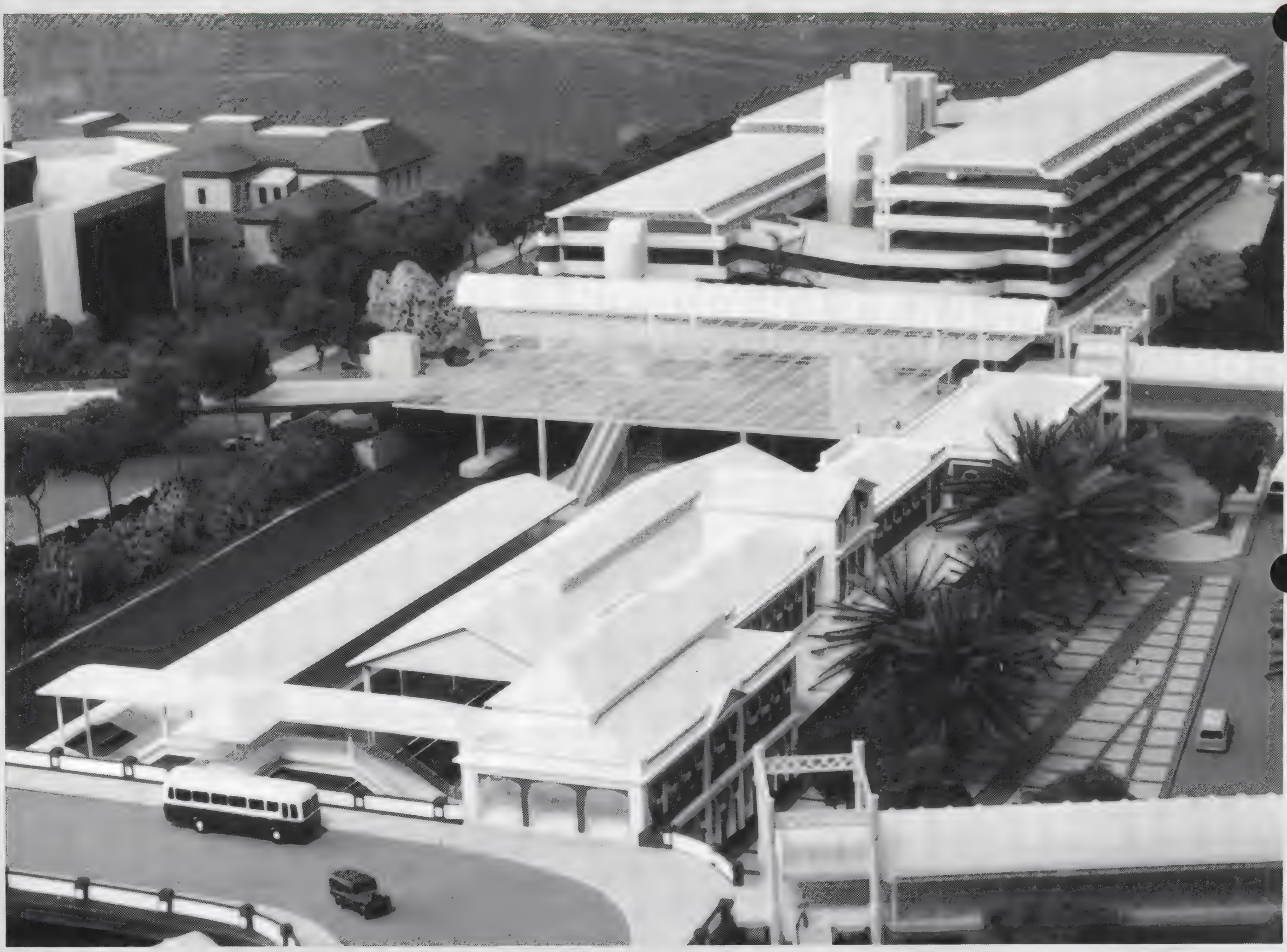
Colourful ROA brochures released

Railways of Australia recently released its new local and overseas passenger travel brochures to the marketplace.

Both publications are printed in full colour and feature State by State attractions awaiting the traveller who chooses to see mainland Australia by rail.

The local brochure is of eight full colour pages while the overseas publication contains 12 pages including details about Austrailpass, available to all overseas visitors to Australia.

The Austrailpass provides excellent savings on Australia rail travel across the entire continent and is excellent value for money.



City Station revamp to cost $44m.

The Forrest Place/City Station Redevelopment Project has passed another important milestone. Apart from a few modifications, the final plans have been approved by the Perth City Council.

A scale model of the redevelopment (pictured above) gives an excellent idea of just what the completed project will look like. The redevelopment is part of an overall scheme that will effectively link the central, business and retail sector of the city with the cultural centre to the north. Situated in the middle of these two areas will be the City railway station that, with its early architecture, will splendidly set off the redevelopment.

The total cost is expected to be $44 million. Contribution by the Perth City Council is estimated to be about $17 million. The two other major contributors to this project, which is WA's major Bicentennial undertaking, are the Commonwealth and Western Australian Governments.

Included in the new City station complex will be shops, child-minding facilities, a senior citizens' centre, changerooms, toilets and a multi-storey carpark which will cater for 485 cars.

Completion of this part of the redevelopment is expected to be in April 1988.

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NEW CORPORATE STRUCTURE FOR THE WEST

The Western Australian Government has given Westrail a new corporate structure.

There will be changes in management at the top, and some new faces as well.

Transport Minister Gavan Troy explained that the changes were appropriate for Westrail in pursuing its commercial objectives.

They would also help to create a more stable and "interactive" work environment.

Under the proposed new structure, the Commissioner will have reporting to him four directors responsible for key areas of the organisation.

These are marketing and traffic; engineering and communications; corporate services; and finance and accounting.

Westrail people who are used to the long-established system of branches will not recognise some of these names. Corporate services, for instance, is a grouping of the existing Industrial Relations and Personnel Branch and Management Services Bureau.

Engineering and Communications brings together the branches of Civil Engineering, Mechanical Engineering and Signal and Communications.

In the creation of these four directorships, the only activity to move is planning, which goes to the Corporate Services Directorate.

Gavan Troy said the changes would help develop experienced managers from whom can be drawn a future commissioner when Ian McCullough retires in 1988.

Among these senior managers will be two who will be new to Westrail.

Already joined is Dick Collister, who has taken up the post of Director of Finance.

Mr Collister brings valuable skills in corporate finance, and he will play an important role in what the Minister described as "a more commercial orientation of the organisation."

The other newcomer will be Jim Gill, who will be seconded from the Main Roads Department in the New Year.

Dr Gill's arrival will be one of the first examples of a new Burke Government policy of creating a team of top managers who can apply their skills to many areas of Government enterprise.

Dr Gill will become Director of Corporate Services.

The third director is already well known to most Westrail people. He is Bruce Sutherland, at present Marketing Director and deputy for the Commissioner.

He will take over responsibility for all marketing and operational activities, allowing Westrail to be even more responsive to our customers.

An appointment to the fourth directorship of engineering and communications is not expected to be made for at least a year.

In announcing the changes, Mr Troy said one of the first actions would be to continue the review of the middle and lower levels of the organisation and recommend changes.

Attention would also be paid to industrial relations policies "particularly in regard to improving co-ordination of all decisions bearing on industrial awards and matters of broad industrial implication."

"In developing these changes with the Commissioner, the Government is not unmindful of the significant success Westrail has already achieved in moving toward a more efficient and competitive organisation," Mr Troy said.

"However, the ongoing challenges in the market place, further staffing adjustment, deployment of new technology in a number of fields, financial restructuring, staff deployment and retraining, and a general lifting of staff morale and initiative are crucial ongoing requirements which must be addressed.

"The Government has every confidence that Westrail personnel will meet these challenges successfully," he said.

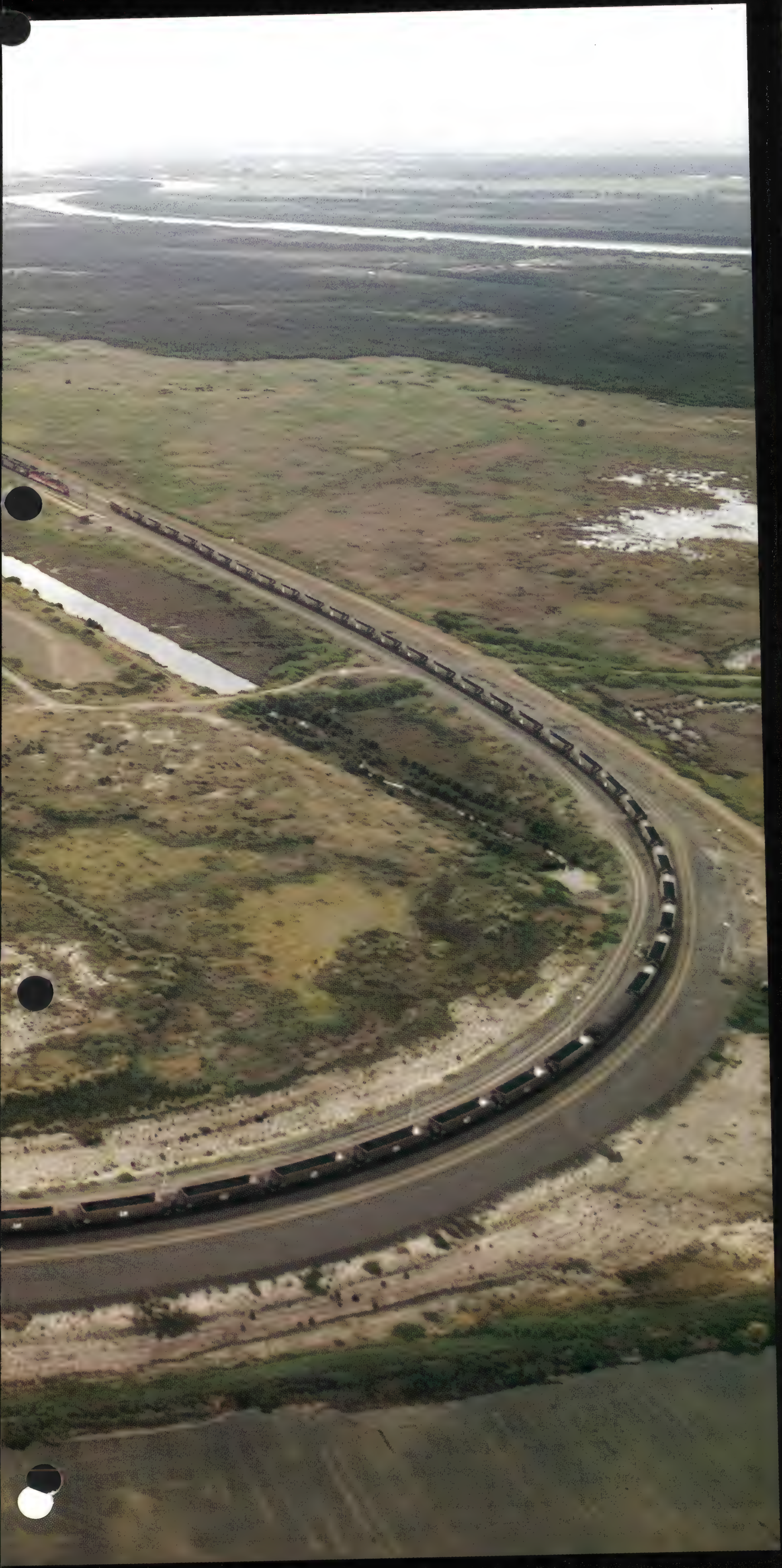
Mr Dick Collister the new Finance Director, joins Westrail after wide experience in accountancy, corporate finance and general management.

For the past two years he has been the managing director of the Chew Corporation whose chairman is the well-known entrepreneur Stephen Chew. Previously he was with companies such as Boans, Whittakers and chartered accountants Coopers and Lybrand.

Mr Collister was born in Perth but did his schooling in Kalgoorlie where he made a number of friends who also later joined Westrail.

Professionally he is a Fellow of the Australian Society of Accountants and is a councillor of the society's WA division.

Longest, heaviest trains hauled by SRA



The longest, heaviest trains ever to run in NSW operated in the Hunter Valley last month.

The two 1.5 km long trial trains each hauled 84 coal wagons weighing 100 tonnes each — twice as much coal as that normally hauled by Hunter Valley trains.

One train ran from Newcastle's Kooragang Island coal loader and returned from the Hunter Valley No. 1 mine at Liddell (near Muswellbrook); the other ran from Kooragang Island to Ulan and return.

"The trains were the heaviest in the history of NSW railways, and this trial was part of our ongoing drive for more efficient train working," said Mr Pat Johnson, SRA's Acting Chief Executive.

"With longer trains we can achieve extra savings in time and crewing."

The 8,400 tonne trains were each hauled by four 81 class super locomotives — each locomotive of 3,000hp.

State Rail expects to haul a record freight tonnage and earn its biggest ever freight revenue this financial year 1986-87 — an estimated 57 million tonnes and $803.8 million.

The longest, heaviest train ever marshalled by the State Rail Authority of New South Wales in the Hunter Valley is pictured on the Kooragang Loop. Powered by four 81 Class super locomotives of 3000 hp, eighty four coal wagons each of 100 tonnes make up the 1.5 km train. The bucket wheel reclaimers of the coal loader at Kooragang are the biggest in the world; the total Newcastle capacity is 43 million tonnes per annum.

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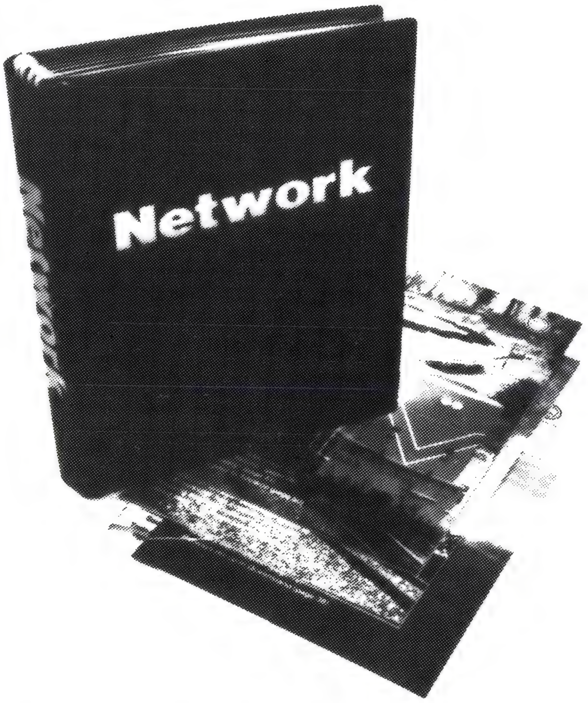

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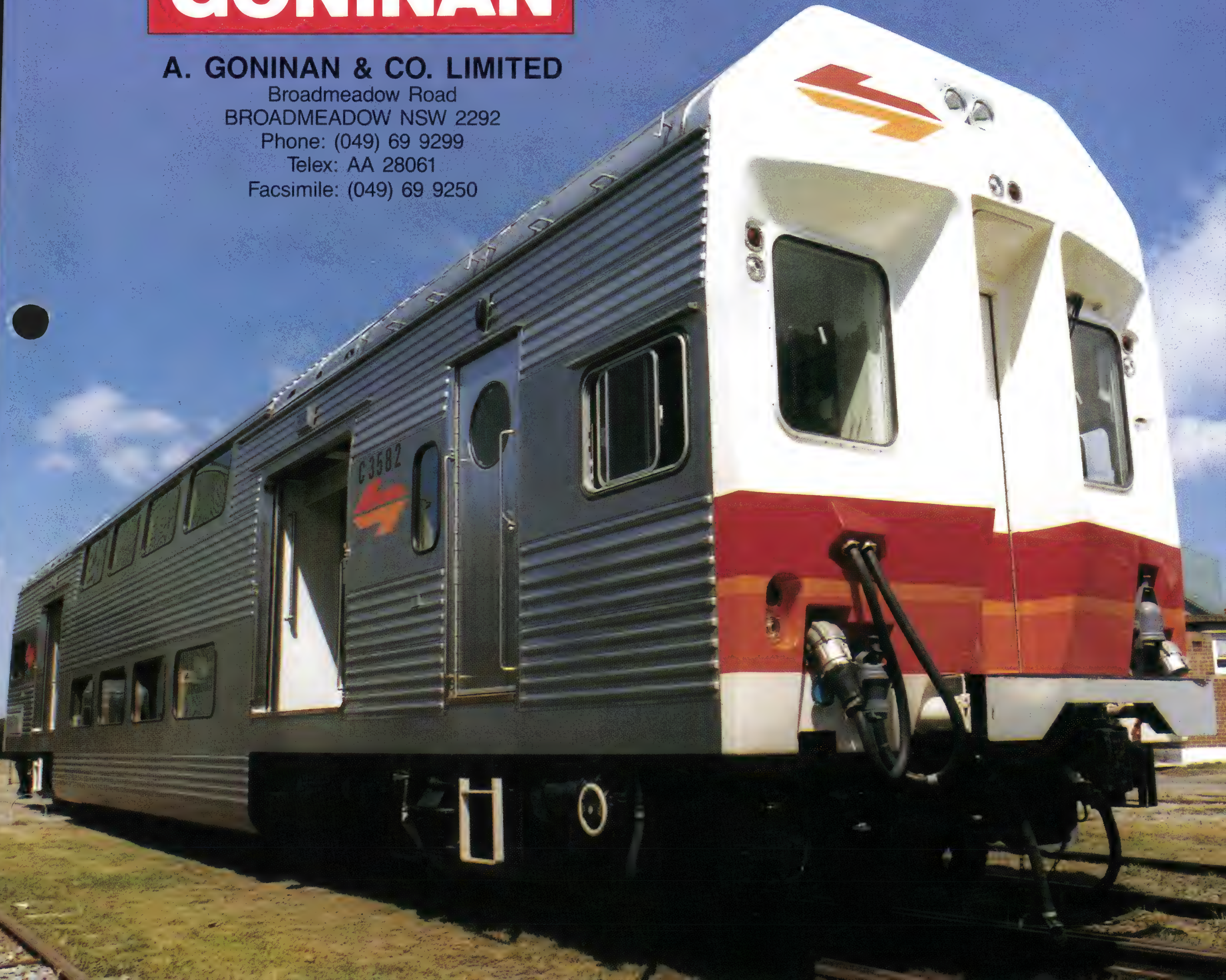


Changes at the top for SRA

The resignation of State Rail's chief executive David Hill, to become managing director of the Australian Broadcasting Corporation (ABC), has brought changes to State Rail's executive management.

Deputy Premier and Minister for Transport, Ron Mulock, has announced that former deputy chief executive, Pat Johnson, will be acting chief executive.

The other former deputy chief executive, Ron Christie, recently left State Rail to become director of the Department of Public Works.

Mr Mulock also announced that John Brew, formerly chief engineering manager and executive director workshops, and Laurie Fuller, former director of finance, would act as the two deputy chief executives.

Mr Hill, who accepted the post of ABC chairman in July, will leave State Rail on November 28.

Mr. Geoffrey Thornely.

New manager for Interstate trains

The Chairman of Commissioners, Railways of Australia, Mr. Ralph Sheehy, has announced the appointment of Mr. Geoffrey Thornely as Manager, Interstate Passenger Services.

Mr. Thornely brings a wealth of experience in the passenger transport area to his new role.

He is a graduate of the University of Sydney in the Faculty of Economics, and his career includes nineteen years with Qantas in the marketing and operational fields.

He will be based in Sydney, the central point for the activities of Australia's interstate passenger trains, and responsible to a Passenger Services Board, comprising the present Commissioners of Railways of Australia.

The objectives of the newly formed Interstate Passenger Services Group, to be headed by Mr. Thornely, will include effective promotion of interstate passenger services, the development and maintenance of consistently high standards of service, and improving the financial performance of these important interstate trains.

Monorail first at Seaworld

Australia's first monorail system was opened at Sea World recently on Queensland's Gold Coast, by State Premier, Sir Joh Bjelke-Petersen.

The near $4 million project is the latest attraction in a $20 million expansion program.

The monorail track follows a two kilometre circuit of the Sea World complex and at one point passes over a track section of the Park's "Corkscrew" roller coaster.

Passengers ride in the new monorail trains at a top speed of 27 km/h from a central or mid-point station as part of an all-inclusive marine park admission price.

Sea World's Managing Director, Mr. John Menzies, said the new attraction is identical to an existing operation at the Vancouver Expo '86 and another planned for Brisbane's Expo '88.

"Each train has nine carriages and passengers can be comfortably accommodated three abreast in the 12-seater, cloth upholstered cabin compartments. Rear compartments are equipped for handicapped persons," Mr. Menzies said.

Drivers are in direct radio contact with Sea World's operations control centre.

Cabin shells are of all-aluminium construction.

Specially designed ventilation openings are atop the fixed cabin windows so as to be out of children's reach. Electrically powered doors can be operated only by the train driver.

Fully laden, the all-weather 40 metre long trains weigh 23 tonnes and are each driven by eight "whisper quiet" motors located in sealed compartments. Power supply is via a 415 volt, three phase system which passes through a thyristor to convert voltage from AC to DC. The system incorporates a back-up power supply.

Each train runs on 20 pneumatic steel belted radial tyres on an all-steel, 750mm wide by 600mm deep, box section track. Each track section spans up to 24 metres between concrete columns. Three bus-bars attached to the track carries the electric power current to collectors on the trains.

Work started on the project in March last year. The trains, ordered early in 1985, were built in Switzerland by Von Roll Habegger and delivered on site late in 1986. Swiss Engineers have been on site recently finalising the electrical system.

Optic fibre contract gets underway

Queensland Railways is installing a 1850 km network of optic fibre cable in conjunction with its $1,050 million Main Line Electrification programme.

The total length of optic fibre will be the largest installation of single mode cable undertaken anywhere in the Southern Hemisphere with the exception of Telecom works.

Olex Cables has won the contract for the supply of 600 km of cable and associated equipment to be installed between Brisbane and Gladstone, Stage 4 of the Main Line Electrification programme.

The total cost of cable and equipment for the latest contract is $3.3 million.

Olex will complete the supply of cable for Stages 1, 2 and 3 of Main Line Electrification to be installed in Central Queensland by early 1987.

Rail man for grain authority

Mr. Vince Graham, General Manager Freight Services, State Rail Authority, has been appointed Managing Director of the NSW Grain Handling Authority.

Acting Chief Executive, Pat Johnson, said State Rail was sorry to lose Vince who has played a major role in the revival of the railways over the past few years.

"He is a great operator and one of our best managers. He goes with our blessing and we are sure there will be a great working relationship between State Rail and the Grain Handling Authority," Mr. Johnson said.

Stopping the rot in sleepers

Operational trials have begun in Britain on a system for maintaining wooden sleepers which could save huge sums of money for the world's railway authorities.

Research shows the system identifies rot in sleepers, kills it, stops it recurring and maintains the sleepers in good condition.

The major component is Timbor Rods — fused water-soluble borates which look like grass rods — made by the British company Bio-Kil Chemicals.

These are inserted into the sleepers.

The other parts are an electronic integrity tester and a synthetic repair treatment.

Also involved in developing the system is another UK company, Pandrol, and the UK Government's Department of Trade and Industry.

With track maintenance costs being in some cases over £60,000 per kilometre per year, British Rail estimates that the system will save £5000 per kilometre in the UK.

Convention traffic bid

State Rail is making a bid for the lucrative and growing convention market by suggesting several major NSW country centres as ideal venues.

In a new colour brochure released recently, State Rail offers convention facilities in such picturesque and diverse areas as Wagga, Albury, Canberra, the Hunter Valley, Port Macquarie, Coffs Harbour, Orange and the Blue Mountains . . . all reached by State Rail's premier trains, the XPT or interurban electrics.

The XPT (Express Passenger Train) has gained wide recognition as one of the finest rail services in the world, with full air conditioning, deep cushioned contoured seats, carpeting, panoramic windows and a full drink and food service.

State Rail's General Manager of Passenger Services, Mr. Barry Cooney has described the new publication as "an exciting new initiative."

"We decided to produce such a planner because of the growth in the meetings and conventions market," he said.

"There is a great scope for the use of our premier trains in this field.

"We can provide every facility needed by delegates travelling to conferences.

"It is indeed a different way to travel, and conferences can even begin on board — a facility which no other style of transport can offer," he added.

A special groups and conventions manager has been appointed by State Rail's Passenger Services to help organisations arrange conventions and out-of-town meetings.

If the railway's established services do not fill the bill special train timetables can be provided with tailored-to-measure facilities.

The 32 page State Rail Convention Planner outlines details on eight suggested destinations, as well as historical and demographic facts, accommodation and convention facilities available.

Illawarra investment pays off

More than one million passengers have used Illawarra train services since electrification was introduced in February last year.

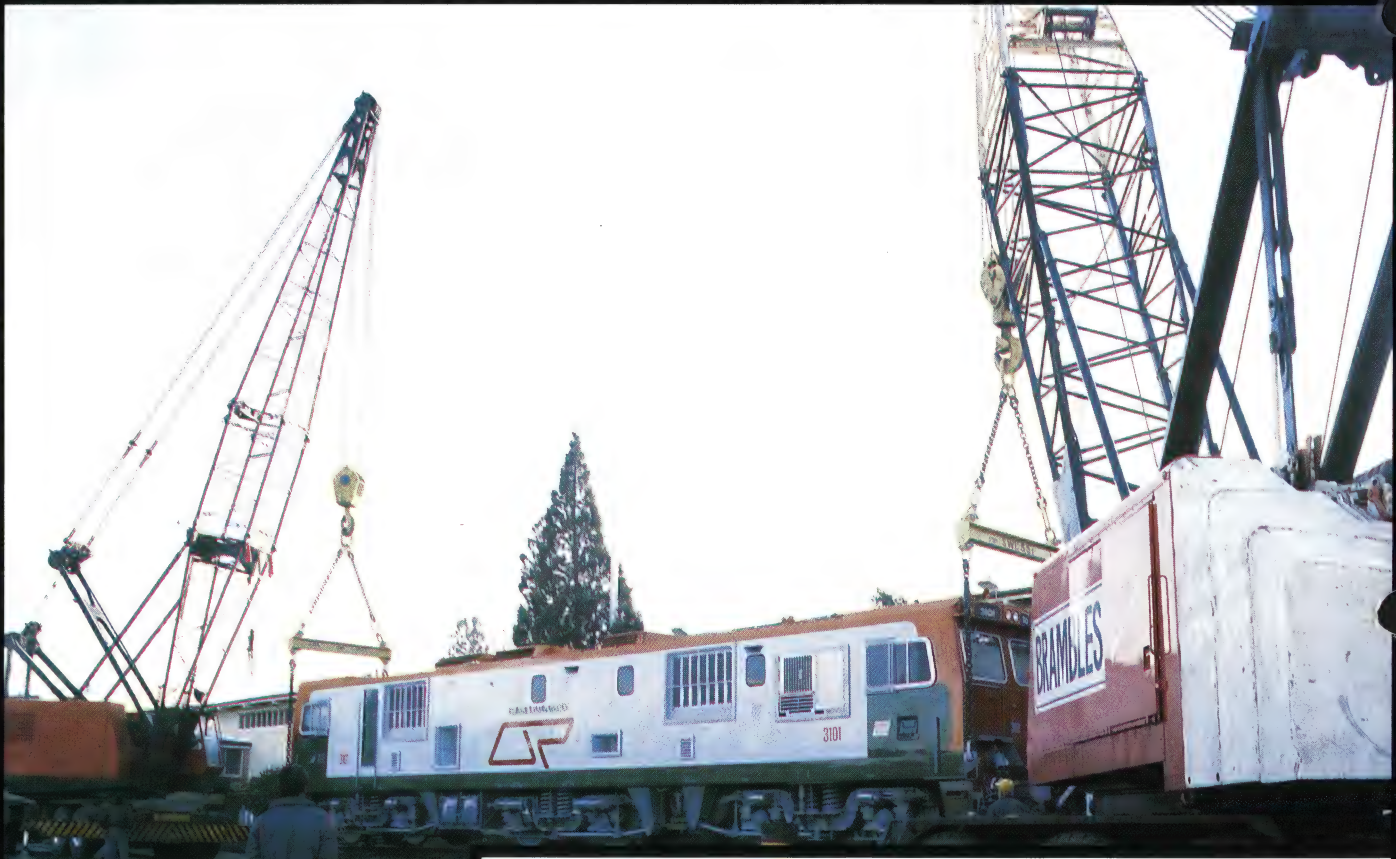
State Rail Acting Chief Executive, Pat Johnson, said this was almost 40 per cent more than for the same period last year.

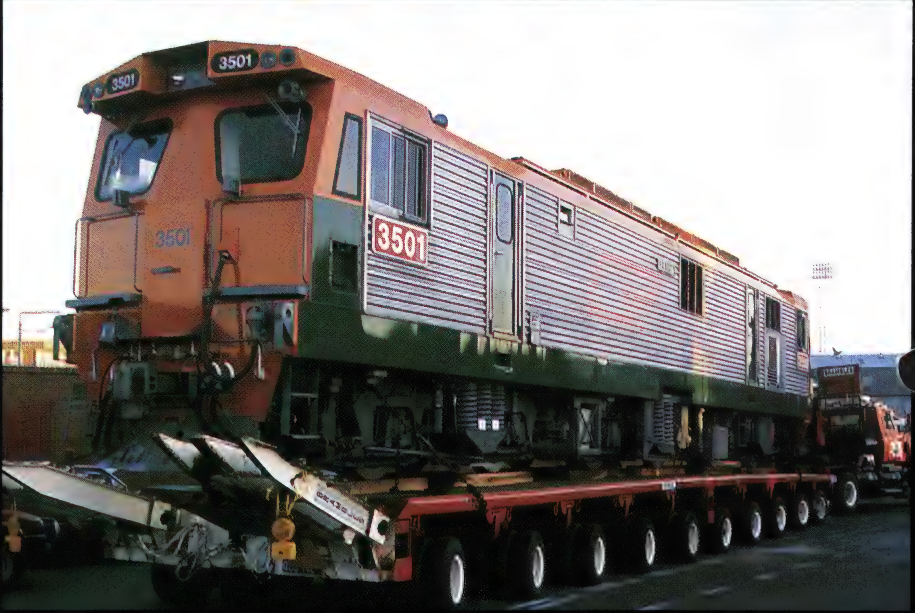
"Results such as these justify the massive $230 million invested by the State government in the project," Mr. Johnson said.

"Patronage between Coniston and Port Kembla has more than doubled."

The improvement in timetabling because of the electrification has also brought more passengers for non-electric services beyond Port Kembla.

These have increased more than 30 per cent in the same period.





Biggest Exhibits at Brisbane Show

Two of Queensland Railways 110 tonne Main Line electric locomotives were the biggest exhibits at the recent Brisbane Show.

More than 800,000 visitors to the Exhibition saw the two locomotives, the Sir Joh-Bjelke-Petersen and the D.F. Lane, which were displayed on a special track.

The two locos are the first of an order of 146, which will provide the motive power for the State Governments $1050 million Main Line Electrification scheme.

The transfer of the locos to the Showgrounds site was a delicate exercise in logistics.

Two 18 metre-high cranes were required to lift the locomotives onto the low-loaders at Newstead Railway Yard.

Transport Minister Don Lane said the display at the show provided an ideal opportunity for hundreds of thousands of Queenslanders to inspect the locos which were the subject of great public interest.

Comeng (Queensland) at Salisbury in Brisbane and Clyde/ASEA-Walkers of Maryborough are building the locomotives at a total cost of $189 million.

The locos develop 2,900 kilowatts of power, almost twice that of diesel electric locomotives currently used for coal traffic in Central Queensland.

Electric coal trains with an all-up weight of up to 10,500 tonnes will run from Peak Downs to Hay Point just south of Mackay and Curragh to Gladstone later this year.

As well as the display of the electric locomotives at the show, the Railway Department provided a popular exhibit in the Government building.

QR simulators a 'systems' first

Queensland Railway's new train driving simulators are the first to be used by a Government railway system in Australia.

The two simulators have been installed at the Callemondah and Jilalan locomotive depots in Central Queensland at a cost of more than $1.1 million.

They will pay a major role in the training of drivers for QR's new electric locomotives, which will haul export coal in Central Queensland.

The new simulators provide a significant proportion of familiarisation training previously acquired in real locomotives on the track.

Drivers benefit as the training can now be carried out at greater depth because of the ability to simulate and demonstrate faults. The simulators allow variety in training methods and provide a higher level of contact for trainees, in any given time, than would be the case with a real locomotive.

As well as being used by enginemen the simulators are also useful to train staff in the demonstration of the operation of various systems, including remote control system and fault indication.

The contract to supply them was won by ACET Ltd, of Perth, which has had extensive experience in the analysis and simulation of the dynamics of heavy mineral trains as operated in the Pilbara iron ore region of Western Australia.

The simulator consists of the following components:

Two (2) driving stations, which were manufactured by COMENG and which are identical to those installed on their locomotive and include the same instrumentation.

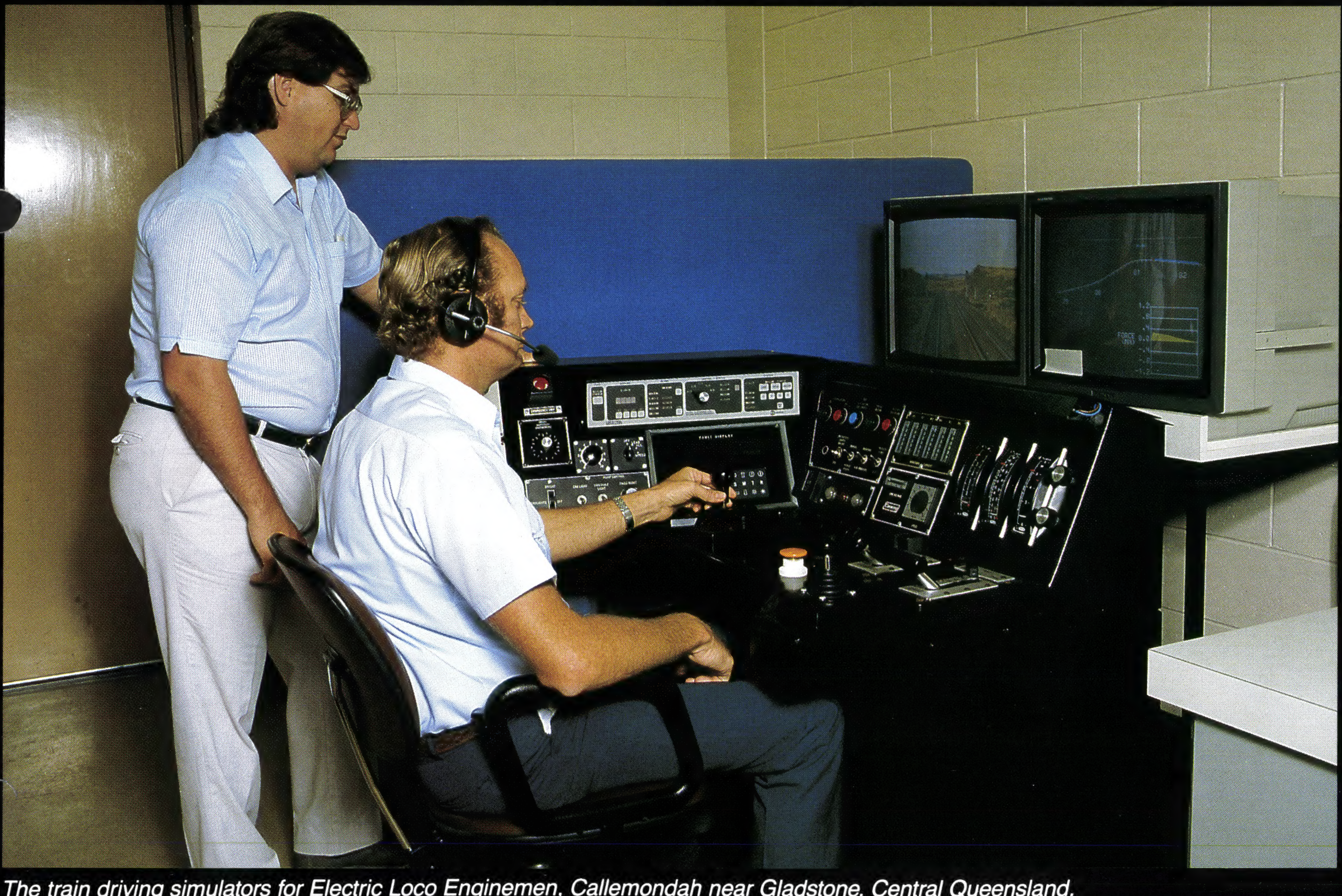
Track Video Monitors with one (1) fitted to each driving station, which allows video of the track on which a driver is being trained, to be displayed from a laser video disk player, which is controlled by the computer.

Simulation Monitors with one (1) fitted to each driving station which displays a graphics version of the track being used along with displays of forces in the train and brake system performance.

Instructor's Console, which allows an instructor to change the characteristics of the train being simulated, during a training session. This console also allows the application of faults and contains a set of monitors, which display the same information shown to the trainee.

The Instructor communicates with each trainee, during a session, with the use of an intercom system.

The Computer, which is a HP 1000 scientific computer supplied by Hewlett Packard. It controls the full simulation in real time and allows re-runs of simulation sessions from a file of stored control actions. The results of all sessions can be produced on either the printer or colour plotter attached to the computer.



The train driving simulators for Electric Loco Enginemen, Callemondah near Gladstone, Central Queensland.

‘Great Non Journeys of Australia’

“Great Rail Non-Journeys of Australia” by Dr Colin Taylor.
Published by University of Queensland Press, P.O. Box 42, St. Lucia. Queensland.
Price: $34.95. Available at leading bookshops and stores.

Several years ago Colin Taylor of the Department of Regional and Town Planning at Queensland University commenced preparation of an analytical survey of Queensland Railways, taking a critical “warts and all” approach.

Colin is a dedicated railway enthusiast. His early university education involved three hours train travel every day for five years — obligatory travel which further fired his initial enthusiasm for the rail mode.

This volume is the result of over four hundred rail journeys and over sixty thousand kilometres of travel by Colin Taylor, reinforced by an associate, Mike Kent, who added another twenty-three thousand kilometres to the author’s tally — making well over eighty thousand kilometres of Australian rail travel.

The book is well presented and illustrated with numerous photographs, maps and even some cartoons.

The author’s research style makes easy reading; this book does contain a wealth of objective information, particularly on lesser known aspects of Australia’s railways network.

One particular paragraph in the chapter ‘Across the Nullarbor’ encapsulates the author’s style and sense of humour. It involves the ‘Indian-Pacific’ stop at Kalgoorlie and describes one of the more infamous attractions of the city. It reads . . .

“There is a famous place in Kalgoorlie where you can stay, and the coach driver will certainly point it out. Only a street or two away from the station, it is unprepossessing externally, resembling a row of tin dunnies but comfortably furnished inside and very expensive.

Upwards of two hundred dollars a night is rather high for a smallish Western Australian town, but although the amenities are few, they say the personal service is exceptional and guests enjoy complete satisfaction within a short time of entering.

Who am I to contradict them? Always open, it lies at the corner of Hay Street and Lane Street, but is is not listed among the city’s hotels in the directory.”

While on the subject of Kalgoorlie, mention should be made of the chapter devoted to the “Tea and Sugar” and the ‘Southern Aurora’.

The impression given by the author is that the ‘Tea and Sugar’ should be better patronised by passengers. This is misleading. This, Australian National train provides **provisions** for railway workers between Port Augusta and Parkeston on the outskirts of Kalgoorlie. Strictly speaking, it is not intended for passenger travel.

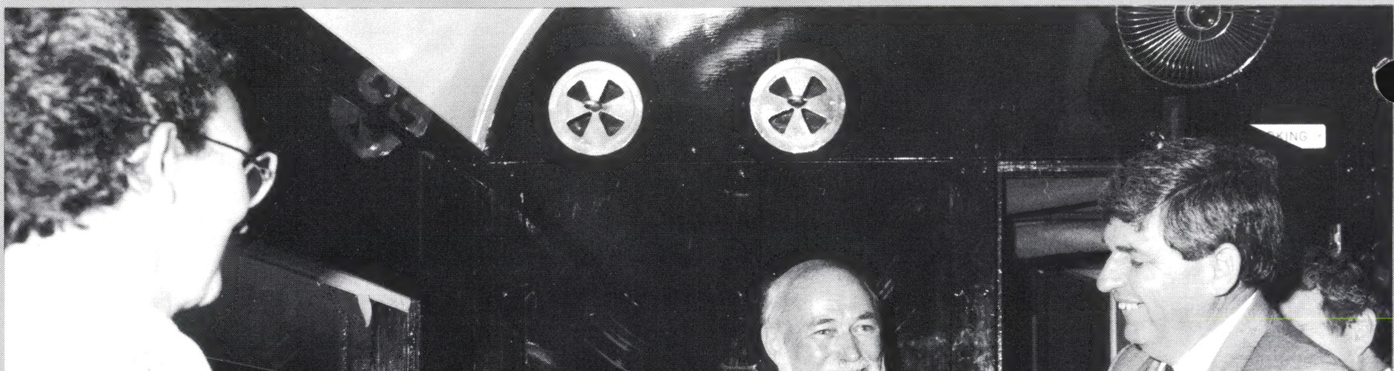
Later in the same chapter Dr Taylor waxes enthusiastic over a journey he made on the “Spirit of Progress” — joining the southbound train at Harden instead of Yass. Apparently his travel was very comfortable indeed until his companion left the train at Albury. The luck of the Taylors!

In summation ‘Great Rail Non-Journeys of Australia’, is a most comprehensive treatise, critical in parts and with a high degree of readability and relief humour. It is priced at $34.95 which may restrict sales.

However, all major Australian libraries could well add this publication to the Australiana section as it does define the spirit of an ageless country, and sometimes elderly railway system.

This is offset by the coverage of the XPT’s and Australia’s more modern interstate trains by an intrepid traveller.

Recommended for general viewing by all members of the family.



Professor Colin Taylor, the author, with Queensland Deputy Commissioner of Railways, Ross Durning, at the book launch at Roma Street Station. The unused dining cars, venue for the occasion, were built in 1935/6 for the Sunshine Express between Brisbane and Cairns.

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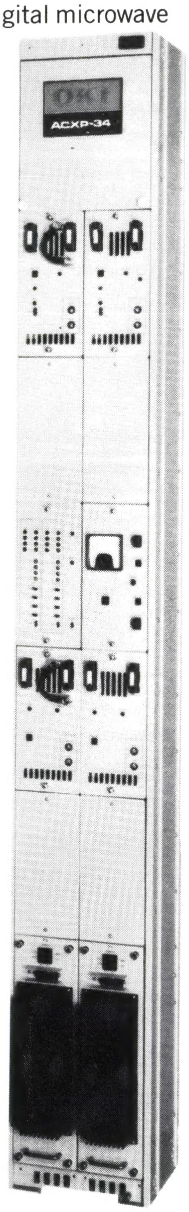

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